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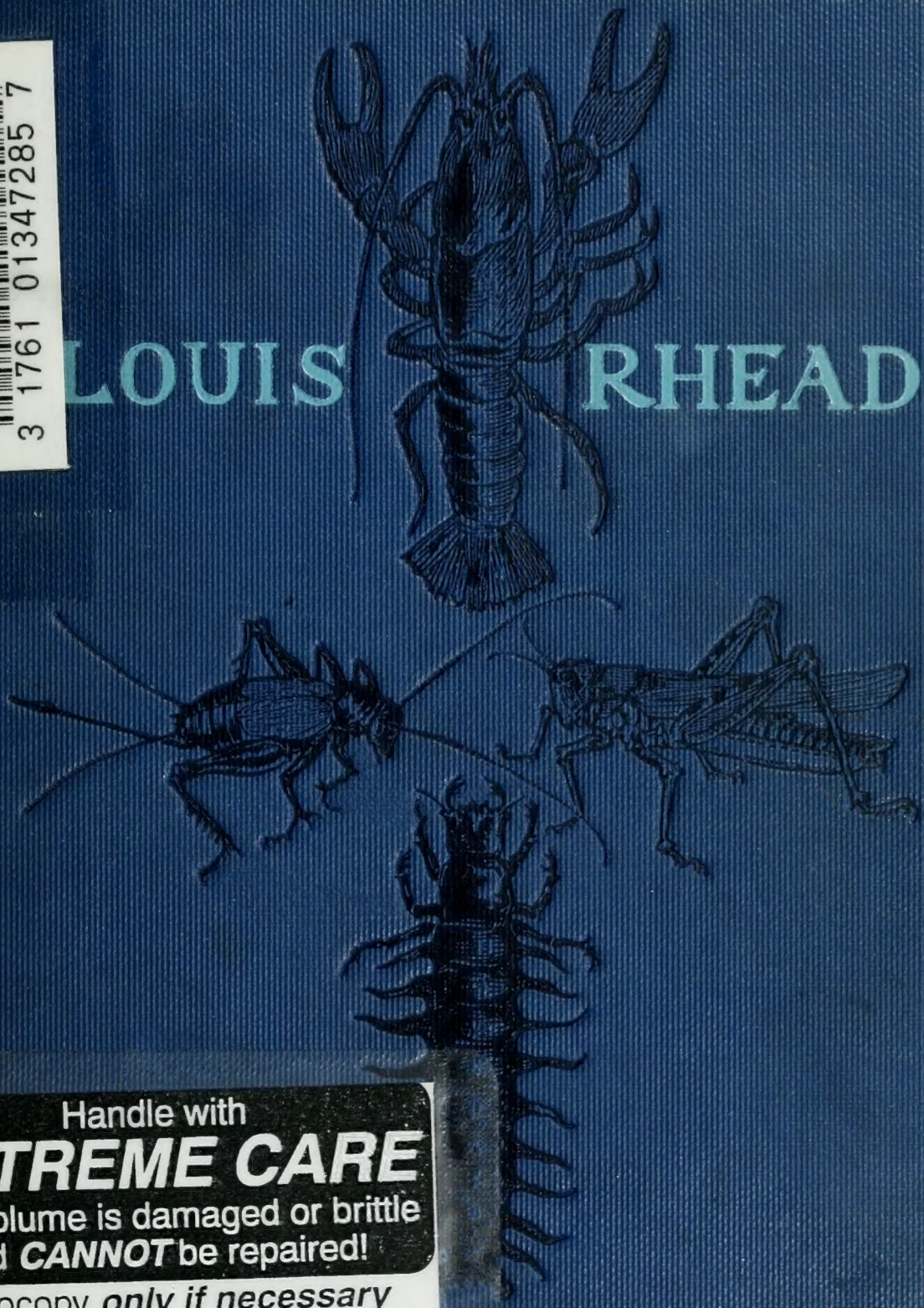

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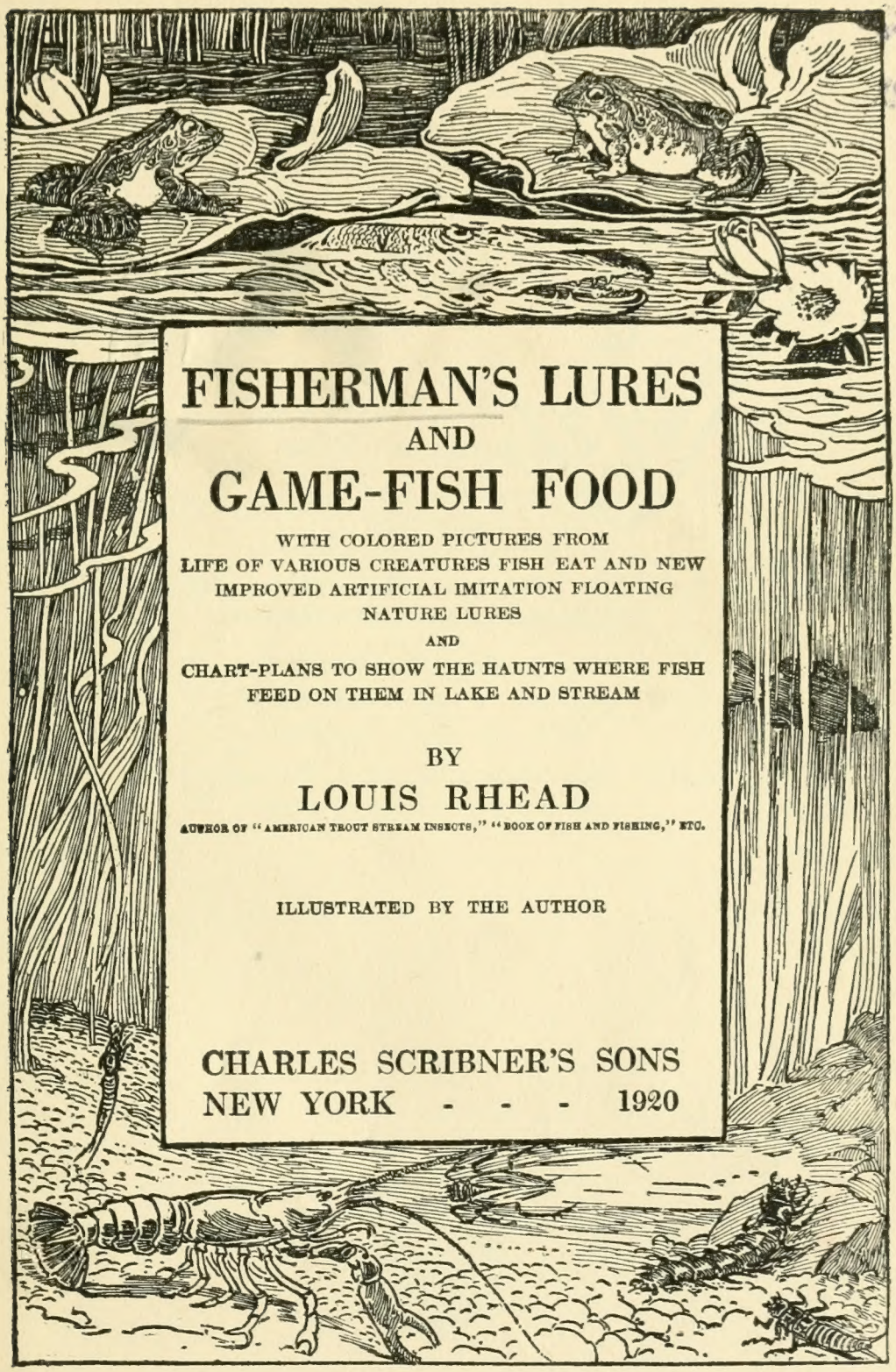

FISHERMAN'S LURES AND GAME-FISH FOOD

WITH COLORED PICTURES FROM LIFE OF VARIOUS CREATURES FISH EAT AND NEW IMPROVED ARTIFICIAL IMITATION FLOATING NATURE LURES

AND

CHART-PLANS TO SHOW THE HAUNTS WHERE FISH FEED ON THEM IN LAKE AND STREAM

BY

LOUIS RHEAD

AUTHOR OF "AMERICAN TROUT STREAM INSECTS," "BOOK OF FISH AND FISHING," ETC.

ILLUSTRATED BY THE AUTHOR

CHARLES SCRIBNER'S SONS
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Published May, 1920

THAT ALL FISHERMEN

MAY KEEP THEIR MEMORY FRESH AND GREEN

THIS BOOK

IS AFFECTIONATELY INSCRIBED TO

THREE ANGLING WRITERS AND DEAR COMPANIONS

BUT LATELY GONE OVER AND BEYOND

CHARLES HALLOCK, M.A.

COLONEL WM. C. HARRIS

KIVERT (KIT) CLARKE

ALL THREE OF WHOM WIELDED THEIR RODS TILL PAST

THEIR EIGHTY-FIFTH MILESTONE

PREFACE

THIS book has a twofold object. First: To multiply largely all species of game-fish for the people's use by a new method and a logical system of "feeding" that will more rapidly attain a better result in the conservation of American fresh-water game-fishes, and also encourage a greater abundance, a larger and quicker growth, and a superior food value. Second: To vastly improve present angling conditions by introducing a new and entirely superior style of fishing with artificial nature lures in place of the live bait that is now being employed in ever-increasing quantities. The amount of game-fish food used for this purpose from the waters of the Eastern seaboard has been so great in the past as to cause a decided shrinkage in the size and number of nearly all species of game-fish caught on rod and line. It is quite possible, as time goes on, if this unnecessary waste

of fish food continues, anglers and others interested will find that their favorite recreation will become utterly worthless to pursue. I contend that the present breeding and planting of game-fishes, both for economic and sporting uses, would be much improved if more feeding and less breeding were done.

It is my intention to make this a companion volume, or rather, supplementary to my work on *Trout Stream Insects* and thus to make more complete the much-needed information so necessary to the angler's higher enjoyment of the sport. It contains material which has not been given heretofore in angling books. The creatures pictured in colors were all painted from living specimens captured in various parts of the Temperate Zone, and the descriptions of their habits are from careful personal studies made during many years' intimate acquaintance with them in the waters in which they abide. If only a few of the suggestions made here on fish conservation bear fruit, I shall consider my labor well paid; but further than that, I hope to induce many thoughtful men to realize that angling as a fine art can be better enjoyed if the angler has some knowledge of animated nature connected with his sport.

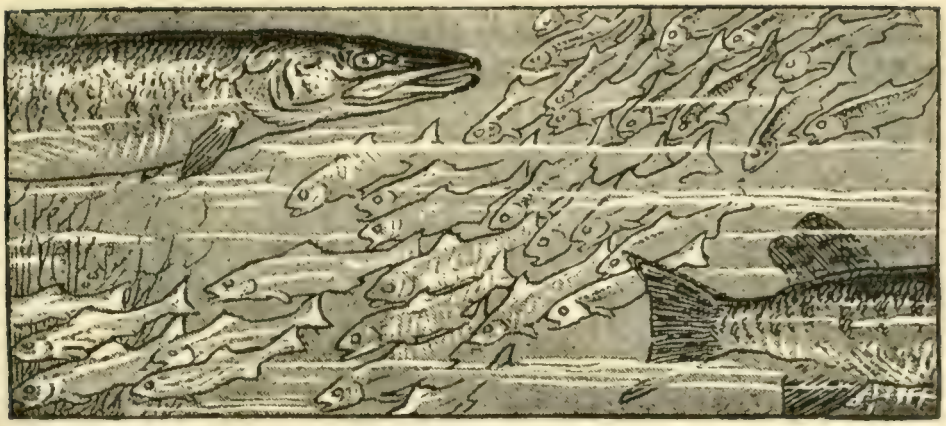
If the wet or dry fly angler fails to lure trout, he does not stop to reason why, but promptly digs some worms. If that fails he comforts himself with the assurance of having done his very best. A careful reading of this volume will, I hope, convince him that there is a better way—a higher and much more pleasing and effective way to get his desires fulfilled.

For the information required concerning game-fishes and their food, I have had to rely entirely upon my own nature study, finding nothing of value on habits and habitats necessary to this work in either angling or scientific works. Scientists deem it more important to tell the number of scales on the gills, while angling authors write on tackle, and how to use it. Curiously enough, each generation repeats the other, from Cuvier the scientist and Walton the angler down the line to our times.

For the colored page of minnows I am much indebted to John W. Titcomb, N. Y. State fish culturist, in loaning me government color-plates from his private library from which to make copies. Also my thanks are due the Hon. Hugh McCormick Smith, Chief Commissioner of Fisheries, Washington, D. C., for his courtesy in giving me

various government documents; Mr. Alexander Walker, of Butte, Montana, for valued information given me on the Montana rainbow-trout; and many others, among them those anglers who have written me of their pleasure and success in the use of my nature lures.

All but three of these chapters have been printed in various sporting magazines during the last five years, but so much has been added and changed to include my latest studies as to make them entirely new. The periodicals in which these articles have appeared are the following: *American Angler*, *Field and Stream*, *National Sportsman*, *Forest and Stream*, *Rod and Gun in Canada*, *Metropolitan*, *New York Herald*, *Outing*, *Outer's Recreation*.



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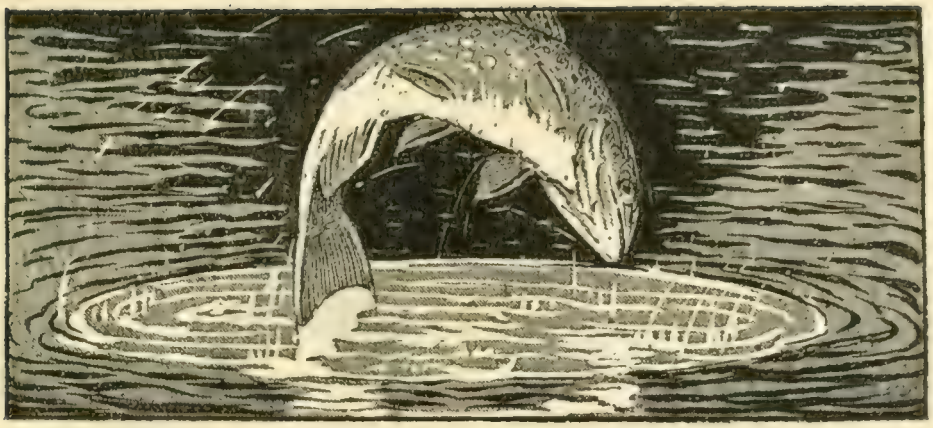


INTRODUCTORY

ENCOURAGING THE GROWTH AND ABUNDANCE OF GAME-FISH

In aquatic life the battle for existence and the survival of the strong are convincingly proved. It is very fortunate that the larger game-fishes continually take a big toll of the young of undesirable coarse fishes, like suckers, catfish, eels, chub, dace, perch, and some of the larger species of minnows, most of which feed and devour a great quantity of game-fish egg spawn. While nature rights itself in the long run, it is wise to assist her to further development in the abundance and size of all edible game-fish, especially so that each and every one of the species are of unusual economic food value, the choicest being

the gamiest, from the salmon and trout down the line. In this valuable assistance, anglers can do their part in more than one way; first by refraining from the use of live bait, allowing it to remain to foster game-fish growth, and by using in its place various artificial baits, either of their own make or procured from others. Nearly every State in the Union, east or west, maintains competent fish commissions and hatcheries to breed game-fish for planting in their own waters. They can, I think, help their States to a much greater degree by more feeding rather than by breeding. The poultryman does not stop at the incubator, turning loose the tender chicks to forage anyhow for themselves; he provides food to fatten up and make them grow. There is no reason whatever why all barren streams and lakes in America should not be well supplied with ample natural food to sustain many times the quantity of edible game-fish now available, if scientific methods were in vogue.

It requires no genius to know that birds, animals, and fishes live to eat; the latter more than any. Fish always congregate thickest in any water where food is most abundant, and the more food of any sort they eat, the more rapid their growth

and numbers. Give them ample food; they cannot help but breed and multiply to a much greater extent than by means of artificial culture. I am given to understand by those who are competent to judge that the natural food for game-fishes is far more abundant in waters flowing to the Pacific, also in the Middle Western waters, feeding or fed by the Great Lakes, than in rivers on the Eastern seaboard. This, if true, accounts for the much larger size attained in the West in different species of trout, bass, and pike.

A six-pound rainbow from Eastern waters is considered a giant. One of sixteen pounds is of common occurrence in Montana. The rainbows there feed on a giant winged hellgrammite and large bullheads; even the insects are of unusual size. While the Eastern rainbow is crammed with tiny insects, which is the only available food, they would soon get the large-size food if it were at hand to devour. When nature does see fit to provide with unusual lavishness, we find the Eastern rainbow takes its full share to suffocation, and it is shown in other species during the annual shad-fly glut, which occurs during May. In our large Eastern trout rivers the minnow family are wofully scarce; indeed the same is true of other food-fish. I am

convinced from my experience and that of others, that both the brown trout and rainbow are much more gamy in Eastern than in Western waters. This may be accounted for by the fact that Eastern fish must hunt more diligently for their food, making them more active, adroit, and cunning.

One of the most distressing things about angling, everywhere, is the large number of young trout caught under size, both by accident and design, which is due to the extreme voracity of all species of trout. When young they are reckless in the extreme, going for the fly or lure with such dash and vim as to often make impossible their return to the water without injury. With plenty of food it would not be so, and it is a crime to kill a trout of any species under ten inches long, because they grow so fast that an eight-inch trout nearly doubles its size in a year under normal food-supply. For that one reason alone worm fishing in brooks where food is always scarce should be forbidden, especially if such brooks be stocked by the State. Indeed all places where fish are planted should not be fished at all for the reason that a young brown trout only four inches long will rise to a small worm or fly in the most audacious manner in precisely the same way his

granddaddy does. I agree, in such cases the conscientious angler is helpless, and the only thing possible is to unhook the foolish youngster as carefully as possible and return it to the water uninjured. It would be hard to judge how many times a trout gets hooked and escapes during its short life, but we do know that if he is captured at seventeen inches instead of seven, the difference is, unquestionably, advantageous to the angler. We are all naturally very proud to capture the big fellows; the satisfaction is greater because the battle is more even. Adroit cunning against our skill—and to encounter such battles often, the angler must curb his insatiate desire for large numbers by returning to the water all but the larger fish, that they may grow for him, or for the other angler, to capture at a later date. This is one important way to encourage the growth of fish. If every angler would do so, in time conditions would be such that all could capture fish of a decent size that would furnish far better sport. I never met or heard of a fisherman having captured one or more large fish but who was, with pardonable pride, most anxious to talk about them or show them to friend or stranger.

The larger fish should be most ardently sought

after, for it is a most undesirable condition to have lakes or streams contain many large fish of cannibalistic traits that deplete the waters they occupy of an astonishing number of smaller fish of their own kind and others. If anglers only capture the smaller sizes, and the big fish eat them as well, the chances are very poor for the stream or lake to be supplied with fish sufficiently large to make fishing worth while as time goes on. It is quite true the bigger the fish the harder it is to capture; for that very reason we should push our efforts more in the direction of finding out just what are the best methods and lures to get them. In that way we solve another problem of how to encourage a greater abundance of fish.

In short, this opening chapter begins with an earnest plea to persuade every angler in this broad land, first to force upon himself a stern self-sacrificing abstinence from the capture of small-sized fish, and secondly, to make every effort to induce others to do likewise. This is of the most vital importance, for, in the short space of two years, each angler will reap the benefit, as the result of larger growth will be astounding and satisfying beyond all measure. I have often thought, if it could only be possible to stop all angling for just

one season, what a vast change there would be in our captures the next year. It would double the size and quantity of fish taken, and that of our pleasure likewise. To abstain from the capture of small fish, while not enough, is all we can expect from the angler. Much more is required from others, in conserving, breeding, planting, and transferring every kind of available fish-food in the most desirable places, viz.: where fish happen to be most abundant and food scarce. Anglers can help along this work, also, by filling their pockets with grasshoppers, crickets, caddis, bottom creepers, garden-worms—in fact every kind of food—and by dumping it in the water, where it will find ever-ready mouths to feed. Even should the food not be taken by game-fish it is sure to feed some creature game-fish eat, for, in the round circle of nature's work, even garbage feeds worms, fish eat worms, we eat fish, and, in the course of time, worms eat us.

In addition to stopping the slaughter of young and undersized fish we must go still further by not robbing game-fish of their food to use as bait to capture them. There are many advantages to be gained by doing so, and we lose nothing by it. In later chapters many good and sufficient reasons

are given why anglers will benefit; in fact throughout this entire volume the subject is treated from every view-point, as I have known it for many years. We not only encourage the growth of fish by making our own artificial flies and lures, but of our own effort we transform the present cruel method of live-bait fishing, which is dirty and disagreeable, into a cleanly, scientific method that is far more effective, artistic, and satisfying in every way.

If we fail now to make every effort to encourage the growth of game-fishes, and still continue with a determined resolve to ignore future conditions, and if new members of the angling fraternity start in to act in a like manner, after a few more years we shall face a situation when it will be too late to recuperate—our goose will be dead—and the golden eggs we took as a matter of course will be out of reach. The splendid, free, open fishing will be absorbed by private individuals and clubs in control of posted waters. These clubs do now, and will in future, restrict the number of fish to be caught more than ever. Then the angler of limited means will ask why he cannot get the sport his forebears did, with all the fostering care the State provided. Many an

angler will say, "what's the use of me putting small fish back when I see lots of others catching them?" Then is the right time for propaganda, persuasion, and advice to those who need it—small beginnings in the end find great things.

In a nutshell, the point is this: We take our vacation, supply ourselves with a fair stock of artificial flies and lures, arrive at our destination, and have no delay or worry of buying or digging baits. We fish with a method safe to catch in a humane and sane manner, and enjoy a greater personal triumph in fishing a higher style with far better results than before.

The last, though not the least important, suggestion to encourage the growth of fishes is that each and every angler bestir himself to form associations or committees to have the laws revised concerning the opening and closing of the trout season of every State on a wise and rational basis. I am not familiar enough with conditions to speak with personal knowledge of the Middle West and far Western States, but I do know by experience of the harm being done in the States of the Eastern seaboard, particularly New York State, which I use as an example. It is very difficult to find out who is responsible for making the date of

opening and closing season as it now stands. Whether it be politicians or the conservation officials, they seem to have done their very utmost to inconvenience the angler and destroy the trout. The best natural trout streams in the State are located in the higher altitudes of the Catskills and Adirondack mountains, where the temperature remains low, with ice and snow water still running up to the end of April, and often later. Till that cold water is run off, all fish food, minnows, bottom creepers, and insects are still dormant. The river is void of life, and is nearly always a raging flood. After the long winter's rest from fishing, most anglers naturally await the opening day with impatience, and, without realizing what adverse conditions will greet them, take their first trip only to find their lines freeze to the rod-tip—no trout responding to their flies; no insects in flight except a few small species on warm days, which are rare.

A member of New York's most exclusive fishing club told me that the opening day in 1919, after a very mild winter, was bitter cold. A heavy snow-storm made him very uncomfortable while wading the stream, located at a low altitude in New Jersey. He went on to say, "fly-fishing was

Adult brown trout feeding on minnows

out of the question; my fingers froze to the rod handle and the line fast to the tip; so I had to turn to the 'inevitable worm'—even that was a miserable failure. There won't be good fishing for a month." The first of May is plenty early enough for the opening of the trout season in the States of New Jersey, New York, Pennsylvania, and Connecticut. A far worse condition is present at the closing date of the season, which needs immediate attention and revision.

Quoting from an angler's letter, written August 2, I read: "The river (Beaver Kill) seems now to contain as many fish as in the spring. I caught four last evening, two fourteen and two sixteen inches long. Three were females, and I thought it a crying shame to take trout so late *now they are full of eggs.*" Whoever framed the law to close the season on the the last day of August must be entirely ignorant of what is best for the fish and fair to the angler. The season should close on the last day of July; which would give three months open season instead of five months, which it is at present. Those anglers who can only take their fishing in the late summer or fall will find in the bass just as good sport, if not better, because trout fishing in August is only good when

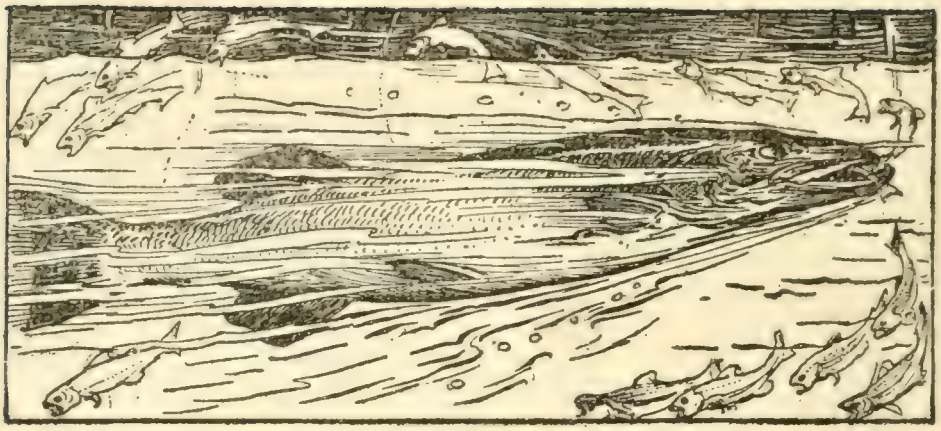
the water is high, which happens on very rare occasions.

To briefly summarize this chapter on how to get more and larger fish for the angler's better enjoyment of his sport—first: Refrain from the use of live bait, which, if left, will foster game-fish growth. Second: Stop the capture of under-sized fish by not fishing in brooks where they abound and by using a method to which they will not respond. Third: Agitate for the revision and shortening of the trout-fishing season.

If each angler will make a personal effort in pushing these three reforms into working order, he will be not only astonished but gratified at the result, that will be evident in a season or two, of the wonderful growth and abundance of game-fishes.

In Chapter IX a brief reference is made to the advisability of propagating and transplanting the Montana grayling to Middle Western and Eastern States. At the present time, for some cause or other, the grayling is almost extinct. There are many reasons why this excellent game-fish should become abundant in every State that has natural trout streams. The first reason is, this fish is every bit as gamy as the trout. It rises to artificial flies

with the same vigor. Its economic food value is equal, and, best of all, the open season for grayling fishing would have to begin about the time the trout season ends, filling a void of fly fishing in the delightful Indian-summer days, from September to the end of December, when frost really begins in the temperate zone. The fisherman whose vacation happens during the fall months would get most agreeable sport. For what reason do Eastern State culturists ignore this fine fish? If there are difficulties, why not endeavor to overcome them? I know hundreds of trout streams in different Eastern States where grayling would be sure to thrive, and would very soon afford splendid autumn sport for anglers. The trouble is (without personal reference to any particular State), fish culturists seem contented to trot along in the rut their predecessors have made; self-satisfied if they pile up vast quantities of trout, half of which by judicious planting would suffice; if the expense and labor necessary for the other half were devoted to the culture of food for them.



I

THE IMPORTANCE OF MINNOWS AND THEIR ALLIES FOR GAME-FISH FOOD

MAKING a wide, though general, survey of what game-fish consume as food, it is certain the varied members of the trout, bass, and pike families subsist almost entirely on a fish diet, principally on the large family of minnows, the young of their own kind, and other species of fish. Were it possible that every species of these three game-fish families could be restrained from cannibalism, they would soon multiply so rapidly as to glut the waters in which they abide and utterly destroy all fish life that nature provides as food for them. Cannibalism induces that trait we call "gamy" by necessitating a lifelong battle of exist-

ence, both among their own and other species. In the restricted space of a pond or lake, bullheads increase so rapidly that they soon devour every vestige of food where they abide, and then at once proceed to devour each other. This same condition prevails with the muskellunge, pike, and pickerel families. If a plentiful supply of fish food is not available, the bass and trout families also feed on the very young of their own kind. It is claimed by some that the brook-trout is an exception, but I have had several proofs that, after it attains a weight of over two pounds, it makes no distinction between the young of its own kind and the young of perch or sucker. We find this cannibalistic trait even among some species of minnows where the adult fish measures no more than two inches long. Thus it is, from the minnow to the salmon, fresh-water fishes prey unceasingly upon each other just as salt-water fishes do in the ocean.

In a document* issued by the bureau of fisheries, several facts are given that may be of interest to anglers on the various species of minnows useful in destroying the eggs and larvæ of mosquitoes in the stagnant water where they breed. Of the

* No. 857.

large variety of minnows there are four of more than ordinary value as game-fish food: The family of top-minnows, which take their food mostly at the surface of sluggish ponds, creeks, canals, and slow-running rivers. The mud-minnows are bottom feeders, though at times they rise to the surface snapping at low-flying insects. The family of sunfishes are the most abundant, having a wide range from Canada to the Gulf. The family of silversides are the most delicate species of all minnows, being most attractive in appearance for use as bait, but very difficult to transport from their habitat.

From the scant information I have gathered, it seems that the minnow family has been much neglected by scientific writers, fish culturists and others. Each State should include the breeding and planting of these most valuable fish, not only as food, but for their value as eradicators of mosquitoes, which makes them of the greatest economic importance where mosquitoes are a pest. If it be not feasible for State hatcheries to propagate minnows, nearly all of the different families are easily transported from their natural breeding places in ponds, reservoirs, lakes, rivers, and even ditches. After being trans-

planted they at once make themselves at home in a new environment and very soon begin to breed, even if the temperature and water is different from their natural habitat. Some species are viviparous and sometimes produce six broods of young in one season. If hungry, the mother devours her own young as rapidly as they are born. The young at the time of birth, while very small, are vigorous, coming into the world with an appetite well prepared to enter upon an independent career, and soon make rapid growth; indeed such is the extreme prolificness of some species that they begin to breed before they are four months old.

These few of the many interesting facts that could be quoted are enough to show that either indifference or ignorance is the only reason why many game-fish waters are almost entirely void of this valuable species of fish food. Minnows may be easily collected in their favorite haunts of small brooks and ditches with small, fine-meshed seines, then transferred to 10-gallon milk cans, by which means they could be shipped and introduced into the lakes and streams where game-fish are most abundant. In lakes and rivers of large extent, where big fish, like muskellunge

and lake trout, abide, the supply of food is never overabundant, and the introduction of entirely different species of fish food is of the greatest value, whether the adult species be small or grow to a fair size. All assist directly or indirectly to make game-fish more plentiful. Wherever trout or other game-fish feed upon one species alone—as instanced in another chapter of trout-eating young sunfish exclusively—it is not so desirable either for fish or angler, because it induces trout to congregate in restricted localities hard for the angler to find, and doubtless from the standpoint of eating not so good as a varied diet. In most lakes the young of perch, dace, and chub furnish the chief food for pickerel and pike if the young of their own kind are not overplentiful, but in later years their growth has been limited. Large fish are quite scarce, for the average caught are small compared with what were captured years ago, when three-pound pickerel and ten-pound pike were common. If fish do arrive at an adult state, anglers do not seem to be skilful enough to get them, as we hear of many being picked up dead, having died of old age or disease. Like men, these very old fish are not voracious. They feed little; long intervals elapse between meals. When

they do take a notion to eat, they invariably devour a large fish, almost their own size; gorge it slowly, and then rest sometimes for many weeks. This trait in the pike family is not apparent in the trout, which are continuously hungry, feeding all the time on what food is available. Indeed of the many large fish I have opened it is quite rare to find food in their stomachs when captured at evening.

In many lakes and streams, by some means or other, different species of fish have been planted that in the past have been considered detrimental to each other; such as brown trout with brook-trout, or bass with any species of trout. So far as my observation goes, I find it makes very little or no difference in the survival of one or the other so far as antagonism goes. But it makes a vast difference if each separate species is planted in the proper environment, and where suitable food is available to it. If so, they are sure to prosper and multiply. Trout love aerated parts of rivers; bass prefer deep, placid pools, where bottom food is easily available to them, with periodical trips to the shallows after minnows. If adult trout and bass meet, the advantage in combat, should they desire such, is with the trout, for the back spine

of a bass is no match against the array of large teeth with which all trout are well supplied. The teeth of bass are no more formidable than if they had rough sandpaper on the edge of their jaws.

The varied selection of minnows shown in the colored plate are indigenous to the entire northern continent of America. They are but a small portion of those available for planting or breeding purposes. In the Great Lakes, especially Lake Erie, minnows and other natural fish food is ample and sufficient, indeed they are so plentiful that large supplies could be withdrawn for planting elsewhere. It is the smaller, much fished lakes and streams that need the earliest attention. To continually capture small fish from recently stocked water, where food is scarce, is the height of folly, and vain efforts to mend matters by continued restocking has little or no results. If we feed the young fish, they will grow and restock themselves. The situation is apparently so simple and plain that fish culturists either do not study it, or are hampered to such a degree as to be helpless. They must be aware that seventy-five per cent of streams and lakes are of no service to the community, being almost entirely barren of edible fishes. The question will be asked, "Why is it so, and what

Black-nosed dace (*Rhinechthys atronasus*)

River chub (*Hybopsis Kentuckiensus*)

Red-sided minnow (*Leuciscus elongatus*)

Blunt-nosed minnow (*Rimephales notatus*)

Creek chub (*Semotilus atromaculatus*)

Fallfish (*Semotilus bullaris*)

Young rainbow (*Salmo iridens*)

Common white sucker (*Catostomus commersonii*)

Young yellow perch (*Perca flavescens*)

Common silverside (*Notropis cornutus*) male

Young black bullhead (*Ameiurus melas*)

Red-nosed minnow (*Notropis rubrifrons*)

Long-eared sunfish (*Lepomis auritus*)

Roach (*Abramis crysolencas*)

Mummichog (*Fundulus heteroclitus*)

Common silverside (*Notropis cornutus*) female

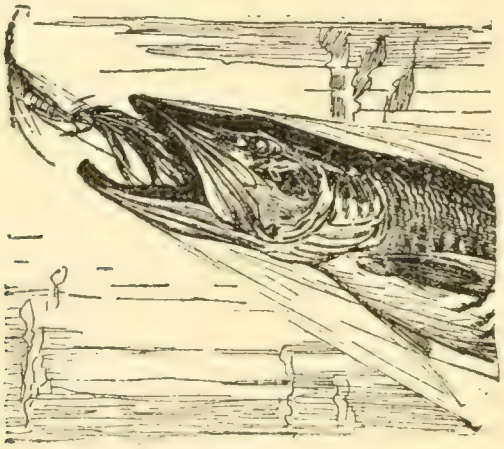
MINNOWS AND YOUNG OF OTHER FISH THAT GAME-FISHES CONSUME AS FOOD

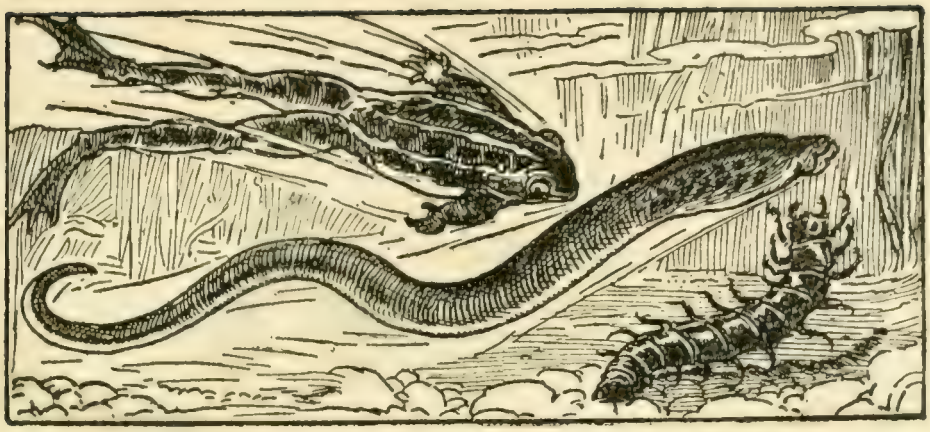
is the remedy?" The reason and remedy is lack of food. Provide it and plant it. Then edible fish will thrive. There is no water on the face of this broad continent, of high or low temperature, running or still, muddy or clear, but what will breed some species of food-fish of great value to the people at large, from eels, catfish, carp, perch, sunfish, pickerel to bass, trout, and salmon. Minnows are far more prolific and abundant in the South than they are in the North, which is due to climatic conditions that allow breeding throughout the year where they may be found plentiful in small muddy ditches of water at a high temperature.

In the North conditions are not so favorable because they lie dormant in the mud during severe cold. In the Catskill region, while waiting for snow and ice water to run off, I can judge to a day when the brown trout begin to rise by the appearance of minnows and redfins as forerunners of them. Before snow-water runs off, the stream side is absolutely bare of fish and insect life. The average date when they appear is the 3d to the 7th of May.

It is not possible here to describe how to breed minnows in captivity. It has been and is being

successfully done at the Beaufort Hatchery, North Carolina, and in other places, according to the bulletin previously mentioned. Aside from breeding, if intelligent efforts are made in the transfer of minnows from places where they do breed that are devoid of game-fish, to where those fish need them, the result will be found to be very advantageous at far less cost than propagating game-fish fry, the greater part of which goes to feed adult fish of some kind or other.





II

CHARACTERISTIC HABITS OF VARIOUS SURFACE AND BOTTOM CREATURES THAT GAME-FISH EAT

THEIR RELATIVE VALUE AS BAITS

THE different creatures here mentioned I think best to describe in a separate chapter from the minnows in order to fit in with the illustrations. It is a remarkable and perhaps a wise provision of nature that not one of the creatures that game-fishes comsume as food is considered fit for human beings to eat. All of them live and breed in or adjacent to the water, and while limited in number, they are remarkably diverse in their characteristic habits. I give here a few notes—along with colored pictures—to briefly describe them,

which I hope will be sufficient to furnish those unfamiliar with them some idea of what they are, and how they live and act in their natural state, in order to assist the angler to an intelligent and effective use of the artificial imitations. These if played properly and with an understanding of the habits of the real creatures will give the angler a peculiarly gratifying reward; they will induce a thoughtful study of the best manœuvres for seducing the fish, and will enable him with a little practice to catch the big ones. The most conspicuous thing which induces game-fish to grab live bait on the hook is the habit of a wriggling movement while in the water, actively trying to get free from the hook.

THE HELLGRAMMITE

The most active and prolonged wriggler of all live baits is the hellgrammite, an exceedingly effective bass bait. Because of the extreme toughness of the larva, its constant wriggle and continued life after being hooked, it is much sought by the angler. Large perch and chub cannot resist it. Pickerel have been known to take it, but other baits for that fish are superior. Wall-eyed pike, big catfish, and eels will take it, but trout

will not touch it. I have tried it in pools where large brown trout abide near where bass lie, and the bass have always responded to it.

The hellgrammite is the aquatic larva of a fly, the horned corydalus (*Corydalus cornutus*), somewhat resembling and closely allied to the dragonfly. It is supposed to exist for several years in the larval state under loose rocks on or just below the water-line of rivers and other waters of low temperature. Here its life is spent in devouring other smaller insect larvæ, and during this period it is most suitable for baiting purposes. But this repulsive-looking, yet harmless, creature is used as bait in all three stages of its life. First in its larval—*creeper* stage; then in the dormant *pupa* stage, and last after the final change into the adult *flying* insect. The corydalus is a large, fierce-looking insect with four gauzy wings which, when at rest, lie flat over the body, which is a cinnamon color on the belly, dark brown at the sides, and dull black at the head and thorax. It begins its flight after dusk and, like the creeper, is entirely nocturnal in its habits. I have never seen it in flight during the daytime in New York regions. This fine, large insect is very abundant on Montana streams, where it is used extensively

by anglers who hook them alive to fish at the surface for the big rainbows. These big rainbows run up to fourteen pounds' weight, and they are so adroit in nipping the insect from the hook that several experts requested me to make an artificial from specimens sent me in "spirits," which I did, and named it the "Winged Hellgrammite." Its body measures over two inches in length, the wings extending half an inch beyond the tail, and with the two long black horns at the head the entire insect measures three and three-quarter inches long.

The artificial hellgrammite creeper differs somewhat in having a row of short-pointed feelers along each side of the abdomen. The belly is grayish cream-color, the back dark brown with black shiny head and thorax. The artificial of this creeper has been found exceedingly good in many swift and still waters for large or small-mouth bass and wall-eye. A smaller and decidedly different species, the artificial of which I have named the "Trout Hellgrammite," because I found it frequently in the stomachs of brook-trout in widely different localities, is described in detail elsewhere along with the other creepers that trout take as food. The hellgrammite creeper is very easily captured

Rainbow-trout
Salmo Iridens

and may be kept a considerable time in damp grass and rotten wood at low temperature.

THE CRAWFISH

In placing the crawfish second in value as a bait, I do so because it is equally effective in swift streams and in placid lakes over almost the entire continent of North America. Indeed wherever bass abide, a live, medium-sized, light brown crawfish is resistless in any condition of weather or season. This fresh-water crustacean is very prolific in all brooks and streams of a low temperature, and frequently in lakes. Its habit is mostly nocturnal, and it burrows holes in the pebbly sand as a protection from its enemies. Its abode can easily be identified by the little mound of fresh sand beside its hole, and if we are quick in our movements we can scrape them out a few inches down, wait a few minutes for the water to run clear and capture them. It requires practice to do it with success, for they are nimbleness personified, running equally fast backward or forward. Indeed, their capture, like any other bait, is quite a difficult undertaking, filling up the off days or early hours when bass are not in a biting humor.

While the crawfish is an expert swimmer, it rarely leaves the bottom to swim in mid-water or near the surface, but crawls slowly in search of food among the stones and sand. It feeds mostly on small fish, dead or alive, and, like marine crustaceans, is very pugnacious, with frequent combats among its own kind or with other creatures it happens to meet. It is rarely seen by day, and little is really known of its natural habits except in confinement. As a bait, its best qualities are the lively kicking movement and hardihood after being hooked, and the prolonged time it takes while swimming downward from the surface after the cast. Bass will dash after it on its journey down, and it is generally perfectly aware of them, so, on reaching the bottom, it will instantly crawl under a stone out of reach. The amateur soon learns that it is best to keep this nimble bait swimming free from the bottom. It swims along entirely with its tail, the numerous legs being used only to balance the body, and it is for that reason I have, after many trials, succeeded in making the artificial with a disjointed tail to move up and down from the body, giving a lifelike appearance to the lure if played properly in working the angler's rod-tip. In its natural environment the craw-

fish grows rapidly, casting its shell several times in one season. When very young, it is pale yellow in color, growing a darker brown with age. For my own part I prefer this bait to be light cinnamon color, not over two inches long with the tail stretched. Many anglers consider a four-inch dark colored crawfish is most effective in either lake or stream.

THE CRICKET

Next after the crawfish I consider the cricket third in value, because it is eagerly taken by all game-fish, both in lake or stream. Its jumping propensities in meadows through which meanders a trout stream, lead to sure disaster, for all kinds of fish congregate in certain fruitful places to await these leaps of death. So soon as the cricket alights on the surface, it kicks and spins rapidly around, making its way to shore. But its landing-place is invariably down the gullet of trout or chub; indeed any fish will take it that happens to be in sight. If properly hooked it makes a most effective live bait by reason of the continued rumpus made at the surface. The cricket never sinks, alive or dead, and especially in placid water is an easy prey, due to its frantic efforts to get back on land, which are so very obvious that

fish cannot fail to see them quite a distance away.

Large, full-grown specimens are not common until late in the fall after the trout season closes, and for that reason they are not so popular for trout as for bass. Sometimes they come out during July. When they do, I consider them superior to any other bait (except minnows) for brown trout during the daytime. My artificial cricket made in three different sizes of cork bodies was highly successful with brown trout as early as June 3, of last year. This is one of the few instances where the artificial is of greater service than the natural bait, as it is also more durable, for the cricket, when hooked, is very tender, and is easily flipped off, besides being repeatedly nipped from the hook by the fish. A very few casts will find this bait limp and almost lifeless. For trout fishing the smallest size is much the best. Bass seem to prefer a good big size, running up to the surface after it as they do after a fly. In Lake George I caught bass on crickets in water thirty feet deep. The most fruitful hunting-ground for crickets is under corn shucks and piles of decaying weeds or other vegetation. If the reader will carefully examine the representation of the artificial cricket

he will consider it, as I do, the best imitation of all my nature lures. It looks still more natural when placed in the water. After a little practice the vibrant rod-tip can be skilfully made to give the lure all the actions of the natural insect, with a result that is exceedingly interesting both in the manner it is made to act and the way trout are seen to take it.

THE GRASSHOPPER

What has been said concerning the cricket exactly fits the grasshopper, of which there are a great many species, differing both in size and color, that appear during the latter half of the summer. The winged grasshopper when hooked through the body is perhaps more strenuous to get free and makes more fuss on the surface, which is due to large wing-spread, yet I hardly think it so good a natural bait as the jumper. The green species, which appears early in June, is a most excellent bait, though it is very tender and dies soon after being hooked. Later, about the middle of July, the red-legged grasshopper appears, small in size but very abundant. This species is a grayish green on the back, the under part being light yellow. It is very active and quite tough on the hook,

from which it is nipped off in a surprisingly dexterous way by trout. Indeed, I have found it very difficult to hook trout with live-grasshopper bait, unless the hook is quite small, No. 6 or 8. Of the several imitations I have made, the red-legged kind has proved most effective. This is made quite large for bass on No. 1–0 hook, and other sizes down to the tiny grasshopper on No. 10 for brook-trout. For brown trout a good size is one that measures one and a half inch body on No. 2 hook. My old friend, the late Wm. C. Harris, in his list of bass baits in *The Book of the Basses*, entirely ignores both the cricket and the grasshopper; yet it is certain he must often have fished with such excellent live baits that are equally effective for almost all game-fish. I am inclined to think it to be an oversight on his part. No angler can fail to get both agreeable sport and fish if well supplied with a selection of various sizes, even if he has but a fair knowledge of how to play them dry-fly fashion. As a surface bait they are very attractive and must be played to skip over the surface, allowed to float along runways in the same manner the natural insect does, when, by accident, it drops or jumps on the water's surface. Grasshoppers are eagerly taken by all game-fish, for perch it is

the best live bait, for pickerel in weedy parts it gets a quick response. Large chub, all three species of trout, and both species of bass feed on this insect whenever chance occurs, which is quite often because the riverside is a fruitful feeding-ground.

THE LAMPREY

This most excellent bass bait is another of limited service. Bass and chub seem to be the only fish that take it with any degree of certainty. Its peculiar wriggle while swimming is its best point, for it is an awful pesky live bait to get snagged on the bottom. We are obliged to keep the live lamprey on the move all the time or good-bye to our tackle. The lamprey-eel (often known as the "lamper") belongs to a very low order of animals, having no bony skeleton, no gills, ribs, or limbs, and being a naked eel-shaped creature with a sucker mouth, the lips of which are fringed with fine hairs. It inhabits the fresh cold waters of rivers and brooks, and gets its living by attaching itself to other fishes, feeding on them by scraping off the flesh with its rasp-like teeth. Adults attain to a weight of several pounds and two feet in length.

This creature is the only one I would never think of breeding or transplanting for food purposes,

indeed its destruction and extinction from our streams would be a most desirable thing. Like the common eel it is nocturnal in its habits, moving about the deeper parts of the bed of rivers in sluggish places which are haunted by suckers and other coarse fish. It is only the very young that is used for bait, the best size being about five inches long. These are usually found in black muddy sand close to the shore of slow-moving backwaters of rivers, and a shovel is all that is necessary to capture them. Dig deep, best under several inches of water, and throw the mud upon the dry bank, then search through it with the hands for the wrigglers. They are more slippery and agile than the eel, and of all live bait the most difficult to impale on the hook. A dead one is no attraction to the bass; its wriggle only is the attraction.

By the time this is in print I shall have perfected a floating lamprey; at present my artificial, while very natural in appearance, is the only non-floating bait I have made. It wriggles all right, but must be kept moving or it sinks to the bottom, with the same difficulty to recover as the natural bait. I shall work on this bait till I succeed in producing a lamprey that wriggles and at the same time floats in suspension about mid-water or near

Young lamper-eel

Adult crawfish

Green leopard-frog

Common red-legged grasshopper

June grasshopper

Nymph-creeper

Brown hairy caterpillar

Cricket

Caddis-creeper and case

Trout-hellgrammite creeper

Bass-hellgrammite creeper

Brown pickerel-frog

Bass winged hellgrammite

VARIOUS CREATURES THAT GAME-FISH EAT (DRAWN FROM LIVING SPECIMENS)

the bottom, according to where it is fastened on the leader. In many rivers the lamprey as a bait is most attractive to bass, and if the artificial is made as I think it ought, it will be one of the best baits for bass fishermen to use.

THE GREEN AND BROWN FROGS

I do not place the frog so far down on the list because of its being inferior to the others as an effective bait, but by reason of its limited availability. The frog is not always, everywhere effective. In certain waters it is supreme, either for bass, pickerel, pike, or muskellunge. Large chub, perch, wall-eyed pike take the frog, at times. I have often fished brown-trout waters with frogs caught on the banks of the stream, but failed every time, though I have ocular proof of trout taking frogs. I witnessed a big captive brown trout gobble four fair-sized green frogs in less than as many minutes, in one case tearing the limbs from the body; a second after, the body vanished likewise. There are certain special waters in which the frog, green or brown, is an irresistible bait for bass and pike.

In the temperate zone, east or west, there are a large number of species of astonishing variety as to

size, shape, and color. The most abundant, covering a wider range, is the black-spotted, green leopard-frog; also the brown, banded pickerel frog; it is to these two kinds I have devoted much time in the last several years in developing a perfect artificial imitation so as to give the angler a worthy substitute for the live frog. In all my long fishing career I do not know of a more painful or cruel pastime than casting out a live frog hooked by the lips. If not taken by the fish in the first few casts, the frog turns over on its back, swells up like a rubber ball, and is then worse than useless. In that condition some anglers take it from the hook, give it a short respite by hooking a new one. A far more effective way to fish a frog is to just drop it on the water, sit still and wait while froggie wends its own path without restraint till it happens to meet its doom in the shape of a savage fish on the lookout for just such a gastronomic tidbit as the bass considers it to be.

The ideal frog water is a weedy, shallow lake, and although very prolific, they are never abundant where game-fish abide. Being both a land and water creature they live in constant danger of being devoured, not only by fish, but by reptiles, birds, and animals which take the frog as part of their diet, from the smallest tadpole to

the big bullfrog. Along the riverside an observing angler will find many more frogs than he would imagine, particularly about grassy slopes and shallow backwaters. I have noticed that their color is similar to their environment. You observe most often the brown frog near rocky, stony shores, and the green frog mostly abide among the green weeds and grasses of both lakes and streams. This fact is well to remember in the choice of color to use for bait, for the reason that fish naturally are more apt to prefer a bait similar to their daily diet. Between the two species, brown or green, there seems to be no preference; one is just as effective as the other, but I do think if brown is common in a certain locality, it is wisdom to use that color, natural or artificial. The habits of the frog are so well known it is not necessary to give details. My artificial is unsuitable for trolling. Like the natural frog it should be cast lightly in open spaces between weeds and lily-pads, or just made to skip along the surface of open water. In a running stream frogs do not often swim across, but when they do, they strike rapidly along with the water flow. They are most effective when cast at the sides where the water is fairly deep and are visible to the fish lying below in the middle of the stream.

VARIOUS CATERPILLARS

Myriads of these creepers of every conceivable size and color drop into the water from overhanging boughs of trees and bushes, or are washed away from the sides by floods throughout the season, and kick and float along the surface until devoured by the fish. For centuries the caterpillar has been considered a most excellent live bait for nearly all game-fish, and artificial imitations have been made in numerous ways, mostly in different colored hackles. I have made them with three small hooks, arranged along the bushy hackle bodies in black, gray, and brown. I have also made them on a small Pennell turn-down eye No. 8 long shank hook in the same colors on cork bodies, so that they cannot sink. At certain times and places these hairy caterpillars are exceedingly attractive to brook as well as brown trout. They can also be used to capture perch, bass, chub, and pickerel.

DRAGON-FLIES AND DARNING-NEEDLES

Many anglers of the Middle West and Southern waters claim that the medium-size dragon-fly and the small darning-needle are both excellent natural

baits for several game-fishes in the shallow weedy waters where they breed and live. I have made artificials of both suitable for casting on the surface, dry-fly fashion, to float indefinitely. There is no reason why they should not be most effective lures in marshy, weedy parts of ponds and lakes where pickerel, perch, bass, and even trout love to abide. All fishes feed on the dragon-fly in both its creeper and its pupa state, and, as in the case of the hellgrammite, feed on it in its winged state. Though its service is not in much demand, I think it will grow in favor, and prove after trials to be a useful lure to use on suitable occasions.

THE MOUSE BAIT

Up to the present time I have not yet attempted to make an artificial mouse, though I feel sure a good one will be found of great service to use in larger rivers and the edge of lakes. I have on several occasions taken the very young of musk-rats and water-rats in fresh condition from the stomachs of brown trout, bass, and chub. In some localities the natural mouse or young rat is a favorite bait for pike, also muskellunge will take them of larger size. Many young musk-rats are doubtless taken by fish while the young creatures

have been crossing the stream, which they often do, following after their parents in search of food. A good artificial requires to have movable forelegs to swim half submerged. The angler who is provided with a set of these baits, live or artificial, is fully equipped to fish for any species of game-fish, in any season or condition whatever.

Before concluding this chapter, mention should be made of why I have not included the large family of coleoptera, or water-beetles, so very abundant in lakes, ponds, and slow-moving streams. In many examinations of stomach contents of various game-fish, I have not yet found evidence that adult water-beetles furnish enough of the food-supply to make it necessary for artificial imitations. Leonard West, in his admirable book, *The Trout-Fly*, gives several varieties that trout feed on, and even prefer to insects. Those he mentions must be habitants of deep, slow-moving streams. Many varieties of beetle creepers do certainly furnish considerable bottom food for trout, because their habit is not to hide, but to move about among the pebbles in search of food during the daytime. Many of the adult water-beetles toward evening leave the streams and spread their wings to soar in the air. In the early

morning they again seek their watery homes. There are several beetles pictured in *Trout Stream Insects*, one, in particular, for May, called the red bug, of which the artificial is a most taking fly for trout. Another, somewhat smaller, called the red-headed gnat, is quite as effective for hot-day fishing. Both are abundant on the water during May and June, though not bred in the water, being land-beetles. The subject is one in which I hope to make further studies.

This chapter on "the relative value of baits," would be incomplete without reference to the garden and night-walker earthworms as trout food, though strictly speaking they are not natural fish food, as they are found most abundant away from water. It is rather from centuries-old associations as to their use as trout baits that they are mentioned here as having been—up to the present time—almost universally used by every trout angler, young and old, from the time of Izaak Walton. Their continued wriggle in the water after being impaled on the hook is what attracts trout. It would be idle talk—nay, false—to say that the earthworm is unattractive, yet I can say, after long and earnest practice of its use, also from the study of many books written

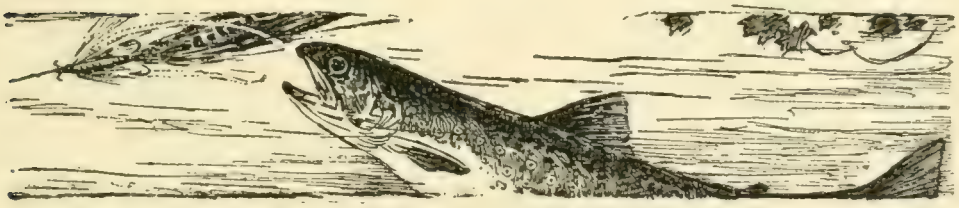
about it—in particular the work of W. C. Stewart, the Scotch expert—in very truth that the earthworm is not really so effective as it is supposed or said to be.

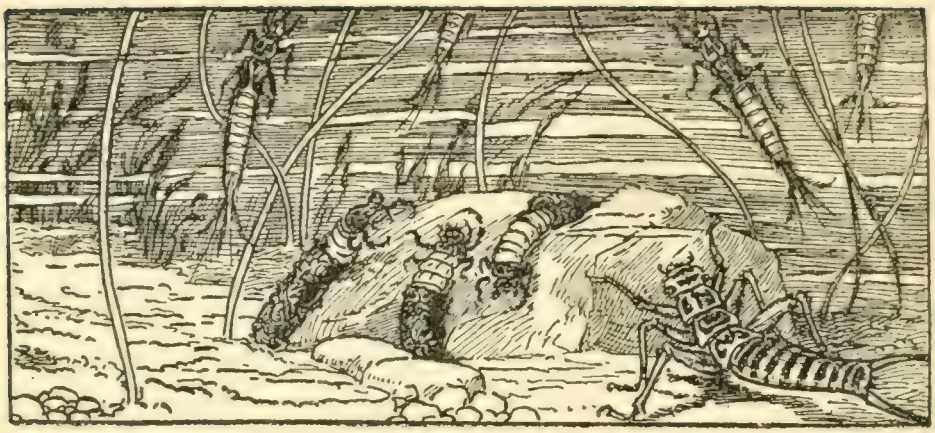
The worm is of greatest service when the water is colored, and in flood and just after a flood. Its greatest danger and harmfulness is when being used as a bait to float down a small brook to attract and capture large quantities of undersized fingerling trout. Sometimes, at early season, before insects are abundant on fair-sized running streams, worms will attract the brook-trout, less often the brown trout, but rarely the rainbow. If sunk to the bottom of deep pools, a kicking worm will entice large fish; not always, however; certainly less often than if the artificial fly is skilfully played in the same spot.

Under normal conditions of water, season, and weather, should two anglers go together downstream—on one side the worm-fisher, on the other a fly-fisher; the latter will, if fairly skilful, always bag the fullest creel. I have proved this many times, and the reason is obvious: Insects are the natural food of trout; worms are not. We would never dream of digging for worms alongside a river, but go directly to the nearest corn or potato

patch, or, better still, a garden or dunghill where they abundantly abide and breed.

It is a regrettable thing to have writers and sporting magazine editors constantly lauding the worm as a trout bait. Such writers are either incompetent fly-fishermen or they write from hearsay and traditional imagination of abnormal conditions. In general use, a well-chosen and properly played fly, either sunk or at the surface, is almost certain at any season, time, or place to attract trout better than worms, except, as previously stated, when fishing brooks for fingerlings.





III

NEW BOTTOM-CREEPER BAITS FOR TROUT NOT HERETOFORE KNOWN

EVERY angler must be deeply interested in things that are new and likely to be good lures to entice either rainbows, brown trout, or natives—possibly all three—more especially so if we can get them to be effective when flies are useless, at times in early spring or hot midsummer. During the last two seasons the post-mortem examination of the stomach contents of many native, brown, and rainbow trout revealed to me the amazing fact that the identical creatures served as bottom food for trout caught in waters as far apart as Lake Edward, Quebec; Lake Kora, Adirondacks; and the Neversink River, New York.

Hence, we may fairly assume trout food to be more or less similar all over the northern zone, east or west, with few exceptions to be mentioned later on.

Doubtless many anglers are unaware that the greater part of aquatic insects while in the creeper state are *not* available as food for fishes, because they are out of sight burrowing in the mud or sandy bottom from three to eighteen inches deep below the water. The new-born wingless flies are soft in substance, of a pale lemon color, not acquiring their full coloration until some hours after reaching the surface. This feature is general in all the classes, and trout fishermen will often be puzzled to find that the same insects have different colors within the space of a few hours. Thus it is that myriads of insects are hatched on the bottom throughout the trout season, and by their daily appearance, travelling through the water to the surface, must naturally furnish abundant food close to where the fish abide, so that it is not at all surprising to find trout at different periods unresponsive to our dry flies on the surface, and even our wet flies just under the surface. Trout are then feeding on a wingless creeper, and a feathered imitation insect is not then wanted.

It is because of this important fact that I have made three new lures, the first ever made (so far as I am aware) for trout fishing under adverse fly-fishing conditions. No matter what part of the season, early or late, these creepers should be effective.

Besides the creepers I have named—trout-hellgrammite, caddis-creeper, and yellow nymph-creeper—I have also made a nymph-creeper in black to imitate the black dose insect, which appears about the middle of August, on wet days, when many of these black creepers may be seen climbing up the large boulders on the river side where they soon change to the adult state and take wing. There is also a dark insect for June which I call the "Chocolate," quite large in size but not nearly so abundant. These two imitations copy faithfully the creeper state as they exist in transit from the sub-imago to the imago state; viz., as they exist while on their voyage to the surface, there to emerge eventually and take flight as a perfect insect.

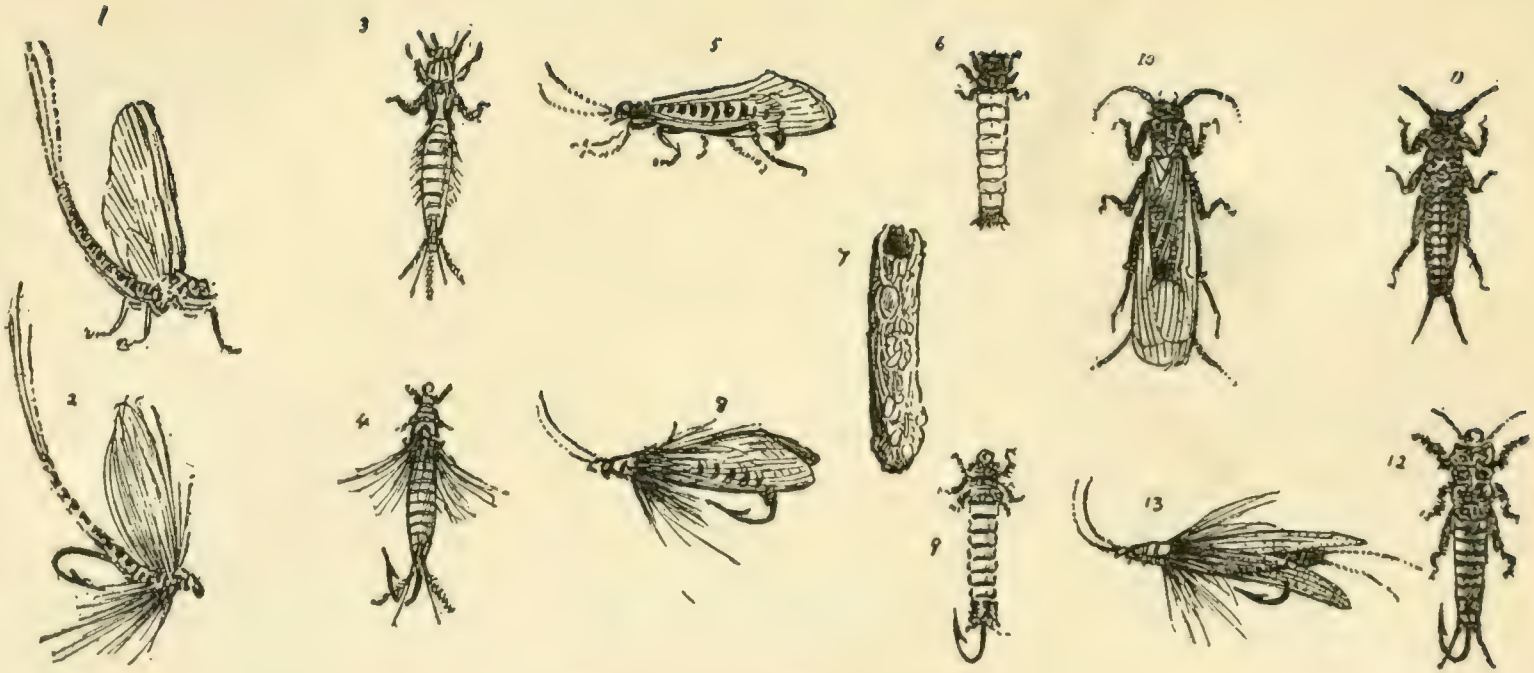
This new wingless nymph-creeper is the largest in size of the many species of drake, which, though they vary much in size and color, are exactly alike in form. The entire body of the artificial is straw-

color with the exception of the two undeveloped purple-blue wings. Being made of raffia and wound with yellow hackle, it will sink slowly to the bottom if cast down-stream, when it should be lifted now and then by a quick rise of the rod-tip, thus giving the creeper a lifelike movement in imitation of its ascent to the surface. If cast up-stream in fairly rapid water the cast need be no more than thirty feet, taking in line fast enough to keep the lure from being fouled. This creeper, along with the others, while very attractive, is not intended to replace the use of flies, but to fill the void during those times when trout are refusing flies.

All fly-fishermen are familiar with the case or caddis-worm creeper that lies on the river bed or clings to large boulders, sometimes in swarms. They have, like myself perhaps, picked out the worm from the case to try these live wrigglers for trout with more or less success. They are, when carefully hooked, wrigglers from Wriggleville, stay well on the hook, and are an entirely satisfactory live bait. In all natural trout streams both caddis and nymph creepers are abundant, furnishing considerable natural food in their season, and it is upon this particular kind of food that trout thrive and rapidly attain great size. For that reason

I do not advocate the use of them as live bait, because it is more to the fisherman's interest to leave them to breed and multiply solely for trout food. If, however, we make our artificials suffice, we shall not rob the trout or other fish of their natural diet, which robbery, if carried to excess, will result in there being no trout to capture. However plentifully the rivers are stocked, trout must be supplied with food to grow and become more abundant. This truism I repeat constantly, yet not too often.

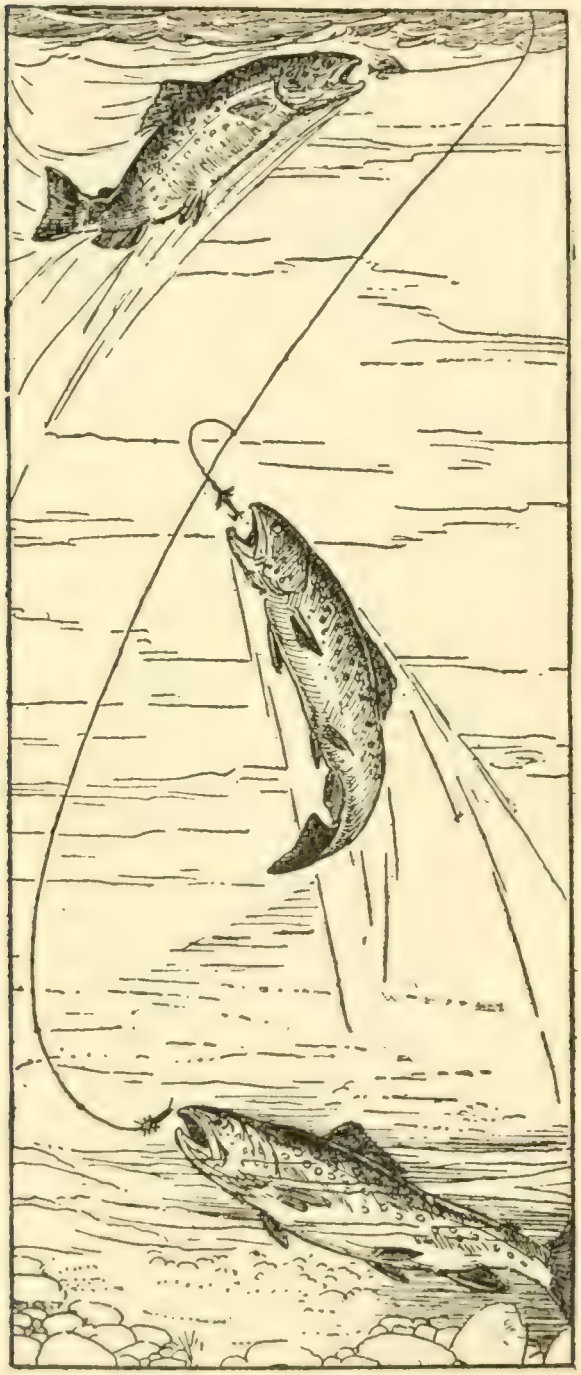
Caddis-flies are classed under the general head of "Duns" (trichoptera), which includes a large variety of species that may be placed in two well-defined families. The first consists of those larvæ which make portable cases which they drag around with them wherever they go, of which the insect I name "Cinnamon," in *Trout Stream Insects*, is one of the largest species, and is here illustrated. The other class is composed of those larvæ making fixed cases, generally attached to large stones, from which they issue in quest of food, and to which they return for rest. Each of these two divisions furnishes a vast quantity of bottom food for trout, which they eagerly devour, both creeper and case, as I have proved by many un-



Trout food from creeper to insect

1. Green drake, adult (May)
2. Artificial green drake (May and June)
3. Green drake nymph-creeper (May and June)
4. Artificial nymph-creeper (May and June)
5. Adult cinnamon stone-fly (June)
6. Caddis-creeper of cinnamon stone-fly.
7. Case of creeper.
8. Artificial cinnamon stone-fly (June)
9. Artificial caddis-creeper
10. Adult orange stone-fly (July)
11. Stone-fly creeper named trout-hellgrammite
12. Artificial trout-hellgrammite
13. Artificial orange stone-fly (July)

NOTE: All these creepers may be fished all through the season



How trout take underwater-creeper baits.

digested specimens found in their stomachs.

The imitation caddis should be fished as near the bottom as possible at end of leader, along with the nymph-creeper tied on a three-inch snell placed above at about midwater, the distance apart being regulated according to the depth of water. A tiny grasshopper, cricket, or tiny terror minnow (all on No. 10 hooks) placed as upper or third lure could be attached to top of leader

to attract trout to the surface. Such a combination has proved irresistible many times, especially down-stream fishing in swift water, or a fast runway through a long, deep pool. If the reader will refer to Chapter VII and consult the chart-plan he will at once know just where and how to work this triple-lure cast. Here you have three indestructible artificial baits for trout to last all season—with luck—that perfectly imitate different kinds of natural trout food, that provide a much higher art than worm fishing, and that are effective at any time, place, or season, with opportunity to cast and play the fish exactly the same as with the most approved fly-fishing methods. I can say here, personally, that my trout-fishing trips are a continuous delight, a constant happy surprise. Being well equipped with a selection of minnows, lures, and flies, I have no worries that they die or get lost. Snugly packed in separate boxes, I take out as I wade along the stream those lures I think most seductive, catch the fish, and have a jolly time.

The third creeper is the trout-hellgrammite, which differs from the caddis and nymph in form as well as habits, being entirely a bottom creeper, one inch long (more or less) lighter and more olive-

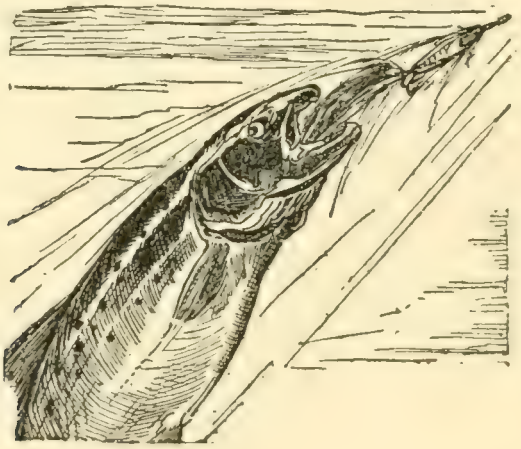
brown in color than the well-known bass bait, from which it differs only in feelers being absent along the abdomen; the head and thorax are broad and flat, of a rich brown color marked with irregular-shaped cream-colored blotches. The under-body is light straw-color, and the six stout legs attached close to the head enable it to move rapidly over or under stones or creep in sand or mud to hide from danger. It is mostly found in the deeper parts of the river bed, always a safe foraging place for larger fish. It does not rise to the surface like the nymph-creeper, but when ready to change from the creeper state crawls along the bottom bed to the sides, up large boulders or stems of aquatic plants.

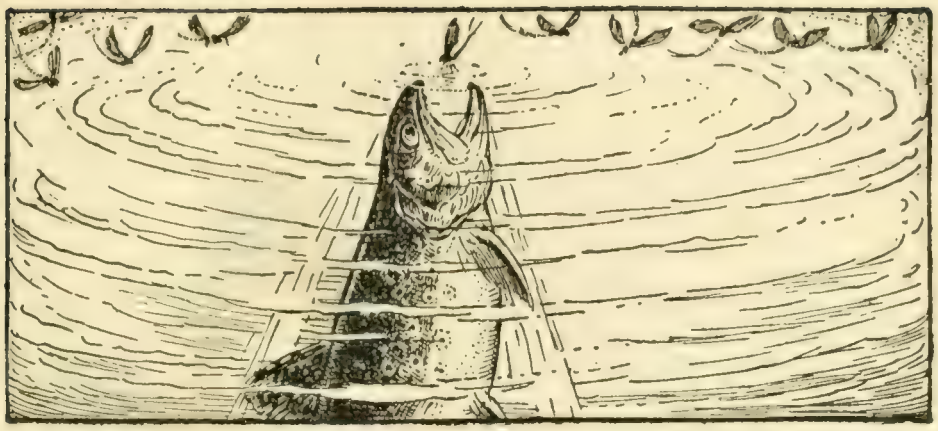
Under the most favorable conditions, the bottom beds of lakes and streams, where game-fish are at all plentiful, are not crowded with creepers. In the battle of life aquatic creatures are instinctively wary: they hide under stones, among weeds, or burrow out of sight under sand or mud to avoid being seen by the sharp eyes of trout, that soon discover and devour them. From the stomach of one large brook-trout caught in the Willowemoc I have taken seven of these hellgrammites from half an inch to one inch and three-quarters in

length. To be successful in fishing the artificial, like the caddis, it should be attached to the end of the leader, cast out as a fly to deep water and allowed to sink to the bottom, where it must be continually moved from place to place.

This little hellgrammite is more common as food for brook-trout, and the artificial is very attractive to them. I have taken several fine trout on it, when they have run up from deep water before the creeper got near the bottom. It cannot fail to attract bass, though tied on hooks much too small for that fish; yet if used and played like a fly it succeeds in giving excellent sport. It will be found a taking cast if alternated with the caddis-creeper at end of leader with the nymph above it on the leader. In addition to the colored representations of these three insects, I give pen-pictures side by side, to show the stages from creeper to insect, with the artificial imitations of both fly and creeper, in order to simplify the differences between them. Personal preference will dictate how the angler shall fish them, whether singly, as a dry fly, in doubles, or in trebles. I try all, according to conditions. In this chapter I hope to convince fly-fishermen how much better, how superior in artistic attainment it is to have along

with you specimens of these nature lures to be ready for use at any time required, rather than the plebeian, dirty method of using garden-worms. The comparison is indeed odious in the extreme, even granting that worms do, at times, catch trout and bass.





IV

HOW DIFFERENT FOODS AFFECT GAME-FISHES

While I am convinced of the truth that the insect diet of game-fishes induces a faster growth and more gamy qualities, it is out of the question for nature to supply even a small part of the insects that are necessary to sustain a fair number of fish in any water. Even if we include bottom creepers, vast in numbers as they are, all would not suffice to supply the food required to make trout lusty and plentiful. In the temperate zone, aquatic insects do not rise over the water in any great quantity till after the first week in May. From that time on, they rapidly develop, if weather conditions are at all favorable, till the

apex of their abundance is about the first week in June, when over two hundred species of insects change from the creeper state at the bed of the river or lake to rise above the surface for one to three days, solely to perpetuate their species and then die. During that period all the trout family feed and gorge, night and day, taking on flesh and sleekness to a greater extent than at any other part of the year. No matter whether you capture trout at early morn or late at eve, their stomachs are crammed full of undigested insects.

As long as insects rise, so long do trout feed. From June the fourteenth the vast number of insects rapidly declines, until at midsummer and during the hot season, aquatic insects are rarely seen during the daytime, and trout are then almost impossible to capture with artificial flies. Many anglers are puzzled at this curious condition. Just the very time the fisherman wants his vacation and goes fishing, he is confronted with the annoying fact that trout are sluggishly inclined to his flies during the daytime. His only chance of success is while trout are visibly feeding for a short time between sunset and dark. The puzzled and vexed angler may be interested to know that aquatic insects are extremely sensitive

to both heat and cold. They won't and don't rise on a cold day, nor do they on a hot day. They patiently wait on hot days to rise over the water in the cool shade of evening and night.

The question arises, What are trout doing on hot, sultry days? The answer is simply, they are doing nothing except lying still, poised at the bottom, where the water is coolest. With stomachs jammed full taken in during the previous night, they can be patient and await their evening meal. Another question might be asked, If no insects abound on sultry days, why don't trout rise to the angler's perfect imitation, played dry-fly fashion, just as the natural insect floats along the surface? Sometimes they do, but most often they don't. Very often they swim up just to say, "No, thank you." Trout are very cunning and wary, especially old ones. There is no doubt whatever that trout prefer insects to minnows or other food-fish. Whether it is because insects are easier to capture or more palatable, the fact remains that artificial flies are the best lure for trout during the heavy rise of insects in late May and June. I have never found a mixture of flies and minnows in their stomachs at that period. It is either one thing or the other. Before insects are very abun-

dant, the stomach contents are most often bottom creepers; now and then may be found a minnow, or at early season flood times we find various worms.

Scientists have made tests on the rate of growth of aquarium specimens on different diets for trout. The result is interesting and quite natural. Trout grow four times as fast on insect and creeper diet as they do on fish diet. Fish food is twice as effective as a diet of worms. When insects become scarce, from the end of June to the end of August, trout turn their attention to a diet of fish, grasshoppers, crickets, caterpillars, and the creepers which are about to emerge for the late autumn flight when the temperature is more normal. We find in September and October insects again become abundant, though not so thick as the spring rise, but sufficient to attract trout, and induce them to feed on insects exclusively till severe cold sets in. Therefore it is apparent that minnow baits, live or artificial, are most effective and best to use, all through the season except the insect glut late in May and early in June. These conditions refer more especially to waters of the Eastern seaboard of the temperate zone, from the Delaware to the St. Lawrence, including Maine,

though the latter may be said to be rather later than the waters of the higher Catskills and Adirondacks.

Trout naturally grow to a greater size in the deep, cool lakes than in fast-running streams, as less effort is required to get food, which is nearly always abundant because of a greater range for fish food to breed. The most fastidious epicure cannot detect any difference in the taste of a cooked trout taken from lake or stream, if both fish have subsisted on similar diet in both situations—if it be in the wild state. The case is entirely different with trout reared by artificial means and fed most often on chopped liver and eggs. The effect of the artificial rearing and the food consumed, is fully apparent in the taste of the fish when cooked. In addition to that, artificial food has a deterrent effect on the gamy qualities of trout, making them dull, listless after being hooked, no matter what bait is used to capture them.

The real truth is, the more fish have to hunt for their food the more gamy do they act on the restraining line. There is also no question that those trout captured by means of artificial flies, while feeding on insects, are always more strenuous in resistance, in other words more gamy, than if

captured on any other lure while taking other food. It is also the greater activity required in getting their food in the swifter waters that makes trout and bass more gamy in resistance, and their activity is more prolonged. In such waters they become more adroit and skilful in ejecting the hook, at the same time in such situations they are more bold and aggressive, taking the bait or fly at top speed, just as they doubtless do for their natural food. I have witnessed trout dart upward to my minnow or fly, miss it, then turning down-stream, rushing along after it like a flash, taking the lure with a smash most admirable to behold. No need of a strike of the wrist, no fear of their being unhooked; they take the lure as if it were their natural food, without fear or scruple.

I have also seen a small-mouth bass of good size in its lair of deep, though moving water, slyly watch a kicking crawfish pass along overhead, then in a leisurely way follow after, view it a few seconds, and return to its lair. Again it would swim down-stream, at a faster pace to reach the crawfish just before it began to touch bottom, when it would mouth but not swallow it, slowly moving to its accustomed abode in such an easy-

Small-mouth black bass
Micropterus Dolomien

going way as to make me exclaim: "Wake up, old chap, and stir around, so that I can strike with good effect." In the glassy water the whole proceedings were in full view. I was too wise to strike before the bait was properly pouched, but when it is and the strike done, the bass instantly shows evidence of the fighter beyond compare he surely is.

Such observations give an opportunity to see exactly how food is taken in the natural way where there is plenty of it, in fairly deep pools several hundred feet in extent. In such places bass don't hunt; they simply take in from the abundant supply that surrounds them. I have on several occasions taken twelve or more nice bass from this place within a radius of twenty feet. The active rushes, and leaps above the surface, seem to have no effect to frighten the other fish, who would leave their particular abode beside a big boulder and in the same deliberate manner calmly take the bait, as if it were just the right thing to do.

Such fishing is quite simple, and it is bound to succeed if you give the fish time to pouch. But when I use artificial bait the procedure is reversed. I strike the moment I feel the bait is touched.

Even if I take it from the mouth it often happens that the fish in a testy humor will again make a dart and take it more securely. Then again, the fish may be scared and refuse to repeat the strike, so that after a while I cast to new pastures. My argument goes to show that fish go for my baits, live or artificial, in precisely the same way as they go for their natural food, which causes them to take it swiftly or slowly, or not at all. This also goes to show that if fish are not feeding on natural food they are very much less inclined to take a proffered bait, be it the real thing or an imitation.

I have never found the stomach of bass, pickerel, or pike so full as that of trout. For one thing, bass are deeply engrossed in looking after their young through May and June, at the time insects are abundant and trout gorging. After June, trout feed about normal, like the bass. In large waters like Lake George and Lake Champlain there are several great rises of insects during July and August, sometimes later. Vast clouds of both duns and drakes appear during warm days, yet this remarkable abundance of insect flight over the surface does not attract the bass to any extent. Just a few may be seen, now and then, but

nothing like the effect such a rise of insects would have on river trout, though not trout in lakes. This remarkable difference in the way trout may be seen feeding at the surface on a glut of insects in one water, and not in another, is entirely due to the effect their natural food has upon them. They don't rise when they have more than enough food at the bottom; they are not looking up, but down; enough to them is as good as a feast.

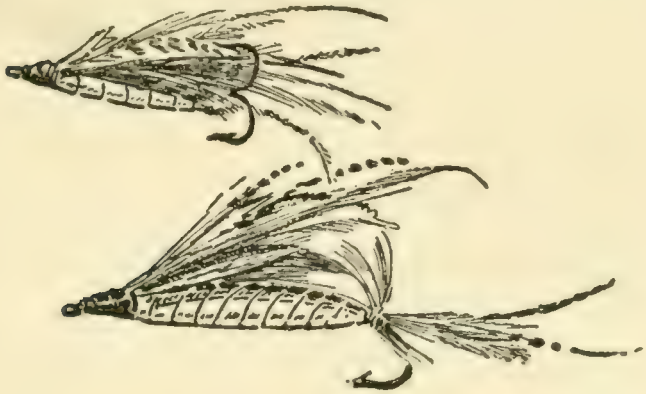
It entirely rests with the angler to meet this abnormal condition. The mountain and Mahomet fable fits it, so that if trout or bass won't come to us, we must go to them. Surely we have intelligence equal to theirs. We must find more seductive lures to get the best of the situation.

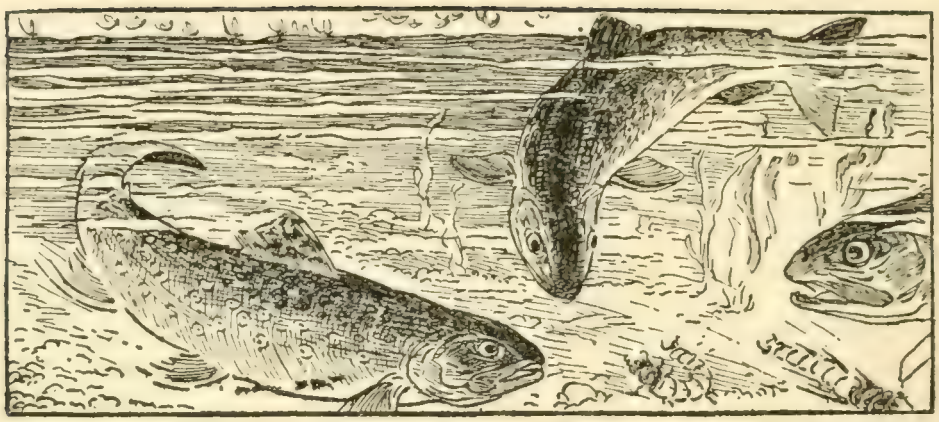
The question again arises: What are the most seductive lures? Here again my theory must be right, viz.: Give the fish what it most prefers, if you can procure it; if not, an exact artificial imitation of it. If its natural food is frogs, be obliging and give it frogs. Creepers, minnows, hellgrammites, any and every thing is at the angler's command to judiciously offer to the confiding fish. If the fish is too smart, and I confess it is so very often, and turns its nose up at our baits,

the fault is ours. We do not garnish our dish to suit—we need consult Chapter XI.

Another important matter concerning the subject of this chapter is that in all waters the fish food changes at different parts of the season. Nature provides restricted periods for various creatures to develop. In spring one kind of food is abundant, and absent in summer and fall. In winter the greater part of the food that fish consume lies dormant in mud or sand; for that reason it is essential to know what is best to choose for each part of the season. Minnows and the young of other fish do not appear in the shallows of rivers till after snow-water has run off. Temperature controls aquatic life much more than one would suppose. Very little food is taken in early spring, as stomach contents reveal, and what little there is seems to be entirely deep-water creepers. To this fact I attribute the attractiveness of the worm as a bait for trout at the opening season. Fly-fishermen seem to be fully alive to this condition, for they candidly confess that their efforts are best repaid on that sort of "fly." The popularity of the "dry-fly" has by no means taken the place of the "garden-fly" or plebeian worm, which in

tackle shop talk is alluded to in the most disdainful manner, yet on the stream the fisherman's worm-box is well filled, though tucked in out of sight, and his hat adorned with an amazing selection of flies, both wet and dry.





V

BOTTOM FISH FOOD IN LAKES IN RELATION TO WHY TROUT DON'T TAKE FLIES

HERE we have a condition that is simplicity itself, yet it has puzzled and vexed many anglers whose conservative ideas never take a turn, and who reason the matter trying to solve a problem that is as plain as plain can be. It is the first and most important thing for the angler to learn that the fish in each body of water (large pond or lake), whether rainbows, brown or brook trout, or even a combination of them, almost invariably feed upon one species of fish or other food. Sometimes it happens to be young bullheads, of which parts of the lake are a living mass. In other lakes I have found the bed to be covered with young sunfish,

from less than a quarter of an inch to two inches long. In other lakes, where the bed is in most part covered with aquatic growth, at certain seasons this is alive with fresh-water shrimps, creepers, beetles, and insects.

In some lakes (large or small) where food is so thick as to be consumed without effort, trout do not rise to flies at the surface; also they do not usually display any active resistance when captured on rod and line, whatever bait may be employed. The right bait to use must be found out by opening the stomach to see what it contains. Anglers have found that in almost every instance the worm, either large or small, has heretofore been the only successful bait to capture specimens for investigation. At the same time, the worm is not always a safe bait, and I am sure that a live bullhead or sunfish, if it can be procured, is bound to be more effective to get those trout, or an artificial imitation made to act in the water like that, or other natural food. It is far more difficult to attain success in bottom fishing than at the surface of lake, where food is not visible and trout congregate together in certain parts which are very difficult to determine. We can only spot them by frequent tests of different food. The

reason why one species of fish food is most abundant is because the food-supply they exist upon is very plentiful, except in case of cannibalism, as in bullheads or catfish. After a time, both trout and bass by feeding bring down overabundance to reasonable limits. The young of perch, dace or fall-fish, suckers, and many species of minnows are preyed upon according to their numbers, and it is natural that fish choose to abide near at hand to get them.

One lake I have often fished contains plenty of large brook-trout which feed exclusively on young sunfish. Local anglers have captured them only on the bottom with worms, and have never been known to take artificial flies or even the natural insects which are at times quite plentiful at the surface. After the first of May a host of large-size sunfish take all the worm baits and no trout are caught during the entire season. As yet I have had no chance to test other baits than worm; when I do, the result will no doubt be favorable. These trout have no opportunity to get worms. It is the kick and liveliness which is so attractive to them, and any other active bait (not attractive to sunfish) would, I am sure, suffice just as well. From the stomach of one trout I have taken as

many as twelve young sunfish half an inch long, while neither insects nor other food was found in any of the trout captured in this lake on many different occasions. Fy-casting, dry or wet, was to everybody a vain effort. This condition is typical of many lakes in localities wide apart, except that the fish food varies, yet in each individual instance anglers, after trying flies and worms, always give the matter up in disgust or despair. I repeatedly get plaintive letters from anglers, even from Canada, who say, "I know lots of fish are in this lake, but nobody can find a bait to capture them and they won't touch flies." The reply would be quite easy if I knew the fish food contained in the lake. The only proper way to go about solving such a difficulty is simply to take tests of the food-supply, either by observation, by the use of live bait known to be attractive, or by artificial imitations of game-fish food, tried one after the other till success is won.

Another difficulty arises sometimes. Some lakes, indeed most lakes, have a disturbance that is generally known as "purging," when the water has a muddy, unclean appearance, filled with tiny particles of colored decayed matter. On those occasions, which happen once or several times each

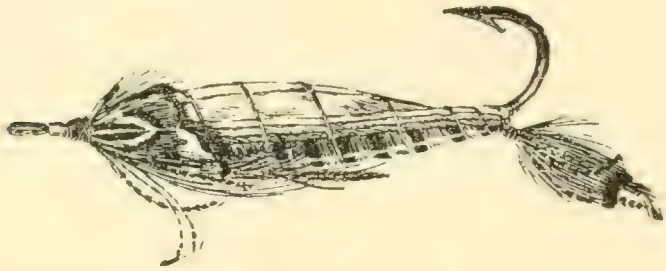
season, the anglers say fish are off feed; and they never try. For generations they have been given to understand that it is useless fishing a purging lake, simply because their limit of enticing baits begins and ends with worm or fly. I hope these chapters will furnish many good remedies worth trying.

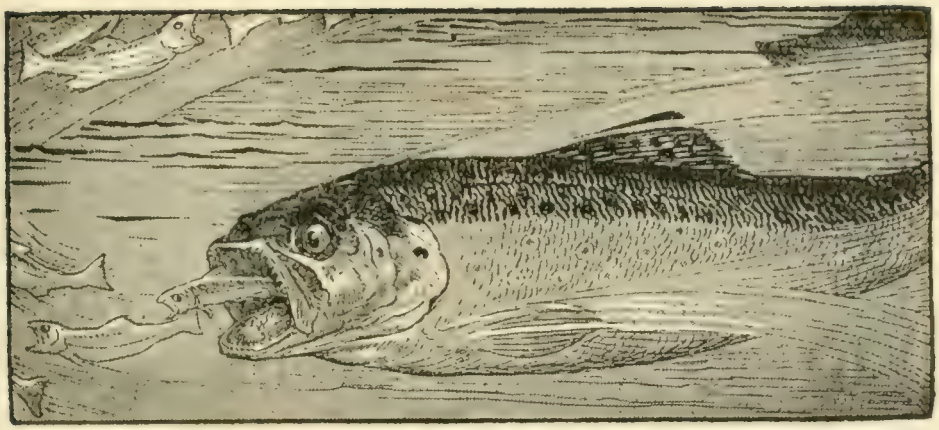
In other lakes I have found that trout live entirely on bottom creepers before they develop into the adult insect state. These creepers are so numerous in certain parts of the lake bottom, that when in an advanced state of growth, finding all food gone, they devour each other. Various species of trout and landlocked salmon at times find a glut of bottom food so numerous that they can feed to suffocation without effort, especially at certain periods when a change from the creeper to winged insect occurs. Lake Champlain is a case in point. Enormous and vast are the clouds of green drakes (known in England as the May-fly, but larger in size) flying over the water every season about the first week in June. Here is the important point: the bass for which the lake is famed have never been known to feed on the glut of surface insects. Doubtless they are gorged with a full share of the creepers taken at the bed

of the lake. The artificial nymph-creeper of this insect should prove a good bottom lure on such occasions for bass. Surely at such times, a good supply of the creepers could be removed to those waters where they are not common, in order to assist nature in a more liberal supply more evenly distributed.

This chapter is intended to convey the truth that if trout and bass in lakes won't take flies, it is entirely convincing the fly as a lure is not perfect, and something else can be made to take its place that is perfect; at least, we can make the effort, and not go home in despair because bass refuse a "plug" or worm. The common saying, "Bass or trout are off feed," is a much mistaken notion. Both these fish are feeding, we may be sure, and if we wish to get them, we must attach to the hook a lure that is like the food they are taking. How much better, then, if our lure correctly imitates their food, in appearance as well as in action, the chances are to succeed, than if we offer them a bait they don't know or don't want. Several of the new bottom-creeper lures to my thinking are just the thing to solve this vexing problem; if they do not, a small minnow, cricket, or grasshopper can be offered in succes-

sion till the fish do respond. Heretofore, outside of live bait nothing was available but plugs, worms, and flies. The angler who does more learning "how" and "why" will find his time vastly more interesting than sitting waiting till fish are in the "humor to bite." I feel certain that bass, and trout in particular, are always in the humor, unless they are overgorged.





VI

NOCTURNAL FEEDING OF GAME-FISH

VERY numerous are the devices seen in the tackle shops to capture fish at night, most of them being a sort of luminous paint on spoons or plugs. Successful or not, the fact remains that at certain times during the season we know almost all game-fish feed actively throughout the night as well as by day. This habit is primarily due to the fact that nearly all bottom creatures are burrowers in the sand or mud, coming out of their hiding-places only at night when the chance of being captured by larger fish is less sure than it is by daylight. Crawfish, lampers, and hellgrammites are all nocturnal creatures, because the food they eat is more abundant during the night.

Hiding by day in the shallow sand or mud, they may be observed as soon as it is dusk moving slowly around, and at night-time the larger fish venture forth to roam about and hunt for food. In some parts of the shallows, one may see in the morning hours the sandy bed strewn with claws and remnants of crawfish giving unmistakable signs that game-fish have been feeding. Land insects and moths fly through the air in great numbers at night, and the same is true of aquatic insects, but only in warm weather. In the higher altitudes during May, and sometimes in early parts of June, the nights are cold, often frosty, which drives the insects to shelter only to resume flight when the warm sun appears. That old adage, "The early angler gets the fish," does not apply to fly-fishing in spring. All through the month of May insects do not begin their morning flight before 10 A. M. For that reason, if any night feeding goes on, it is upon bottom creepers and minnows. Because of the darkness we cannot of course say of a certainty that fish do feed throughout the night, as we are unable to see them, and the only clear proof that they do is an examination of those fish captured shortly after dawn to find undigested food, which I have often

done at different parts of the season. Another proof, if necessary, is found in the successful results of the nocturnal angler. I will give a few incidents of the numberless in my experience.

On a hot day in July, accompanied by a well-known dry-fly expert, we fished diligently the morning and afternoon till nearly dark without getting a single fish. Crossing a brook at its junction with the river, we observed two youths, sons of our hotel host, busy in the water spearing mud minnows with a three-prong table fork. To our passing remark, "Going fishing?" they replied, "Sure." The following morning our hostess displayed two browns and a rainbow, three exceedingly nice fish, plump and well-rounded, fifteen inches long, caught on the *fly* the previous evening by her sons. These two youths, like all "natives," keep their eyes open as to the whereabouts of large fish; then after dark know exactly where to swim a live minnow right past the nose of these fish. We, being supposed by other angling guests to be experts, were completely outfished by innocent natives using primitive tackle and just a "common pole." Many of the so-called "prize fish," entered as caught on a fly (name given), are captured in this nefarious manner. One astute,

wily country fisherman gave a dollar to a boy who picked up along the stream a dead brown trout of eight pounds' weight. This "gentleman" promptly secured two friends who witnessed and signed as to the weight, sent in measurements, caught on No. 12 coachman fly, and was awarded first prize of a tent and camp outfit for his skill as an angler.

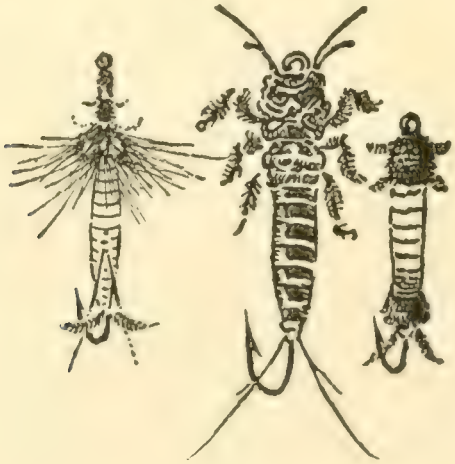
Returning to the subject of this chapter, it is doubtful wisdom to cultivate or find means to make night fishing popular. Wading and fly-fishing is out of the question, and boat-fishing with a lantern is merely the capture of fish without a vestige of sport in the game. The only really successful results are attained at night by swimming a live or artificial minnow down a swift runway where you know trout abide, and the chances are all too favorable of getting the fish. Lake fishing for bass, pike, and wall-eye after dark, is practised in many places quite as much as day fishing, mostly on trolling method. Bait or plug casting when you cannot see is somewhat precarious, especially when line snags occur, which is more likely to happen than by day. Marine fishing is highly successful by night. All species of fish migrate at night; salmon, shad, and smelt ascend

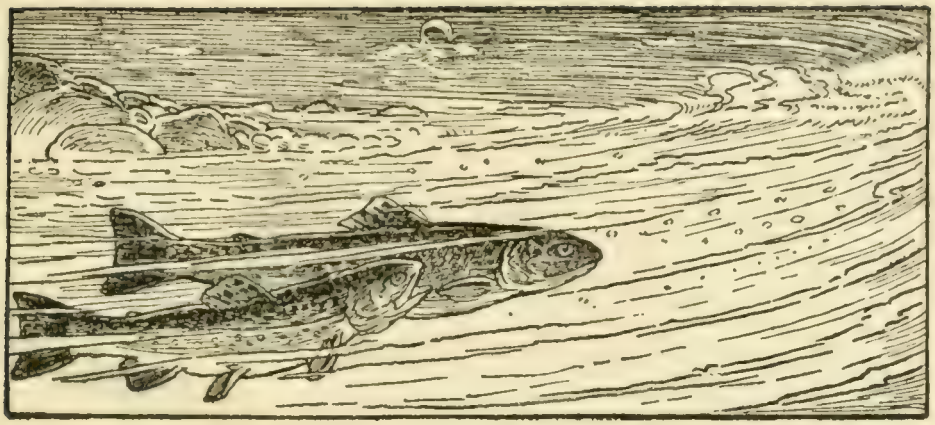
streams at night on their way to spawn. In the fall, trout lie around mouths of brooks till water is high, then start at night for the spawning beds, and when that duty is done return to the river in the same manner by night.

We know for certain that trout as well as bass leave their favorite haunt in deep pools to roam around by night in search of food, often to the shallows after minnows. Most often very large trout are seen late at dusk near the banks of the stream in six inches of water (more or less), where they capture young frogs, young muskrats, shiners, and other large-size food. On my tramp home along stream just before darkness sets in, I often meet boys, youths, and men on their way downstream carrying a lantern and bait-can to a favorite rock where they seat themselves till far into the night fishing for suckers or chub, always in the hope of getting on their coarse tackle some roaming trout or bass. They often do capture very large trout on a big hook, on which is impaled either one big or a bunch of small worms, which is sunk to the bottom and allowed to rest there till taken. They know such places are not fruitful by day, because of inactive feeding. Set lines placed at evening for river eels, baited with pieces

of fish and worms, very often have trout among the catch when taken in the following morning.

Finally, we may rightfully conclude that all fish do take food of some kind through the night as well as by day, if food is available, as we are sure it is. Night fishing, so far as results are concerned, is perfectly proper, and to my thinking quite excusable to those men limited to week-end vacations. If they do spend part of the night, say from dark to 2 A. M., they are bound to get some fish for their friends at home. Indeed, they are much more likely to succeed thus, than by fishing throughout the hot days in July and August. If they use artificial baits, success is more sure, because hooking live bait and keeping it in proper trim is most difficult after dark.





VII

A DESCRIPTIVE CHART-PLAN TO SHOW THE HAUNTS WHERE TROUT FEED IN A RUNNING STREAM

TROUT fishermen doubtless have often been perplexed at their non-success after all known efforts have been employed—when on previous occasions they have been lucky in the very same water. The elusiveness of trout is very marked—that is, wild trout—in big water: rivers from four to ten feet deep and two hundred feet wide, more or less. We do not consider brook fishing in a foot or so of water containing trout that average six inches, but rather a river able to sustain large fish of four to six pounds, a river that contains ample fish food and abundance of aquatic insect

life. Some fishermen, having but a limited experience, will often go to a river that is absolutely new to them, and the problem is how are they to begin, the time to fish, and to what parts of such a river it is best to devote their energies.

The angler of long experience has a fund of knowledge that gives him considerable advantage over the amateur. The expert will know at a glance (if conditions are fairly good) where to cast his fly to get a trout. The amateur will cast anywhere and everywhere over the water with more or less doubtful success. For my own part, I like best to fish a river that I am thoroughly familiar with, so that I can cover a long stretch of half a dozen miles in a day, skipping barren spots and choosing good ones as I go along. I know others (George La Branche, for instance) who much prefer a good short stretch and fish it thoroughly. I am not sure but what he is right; especially if he finds a stretch of water suited to his epicurean taste.

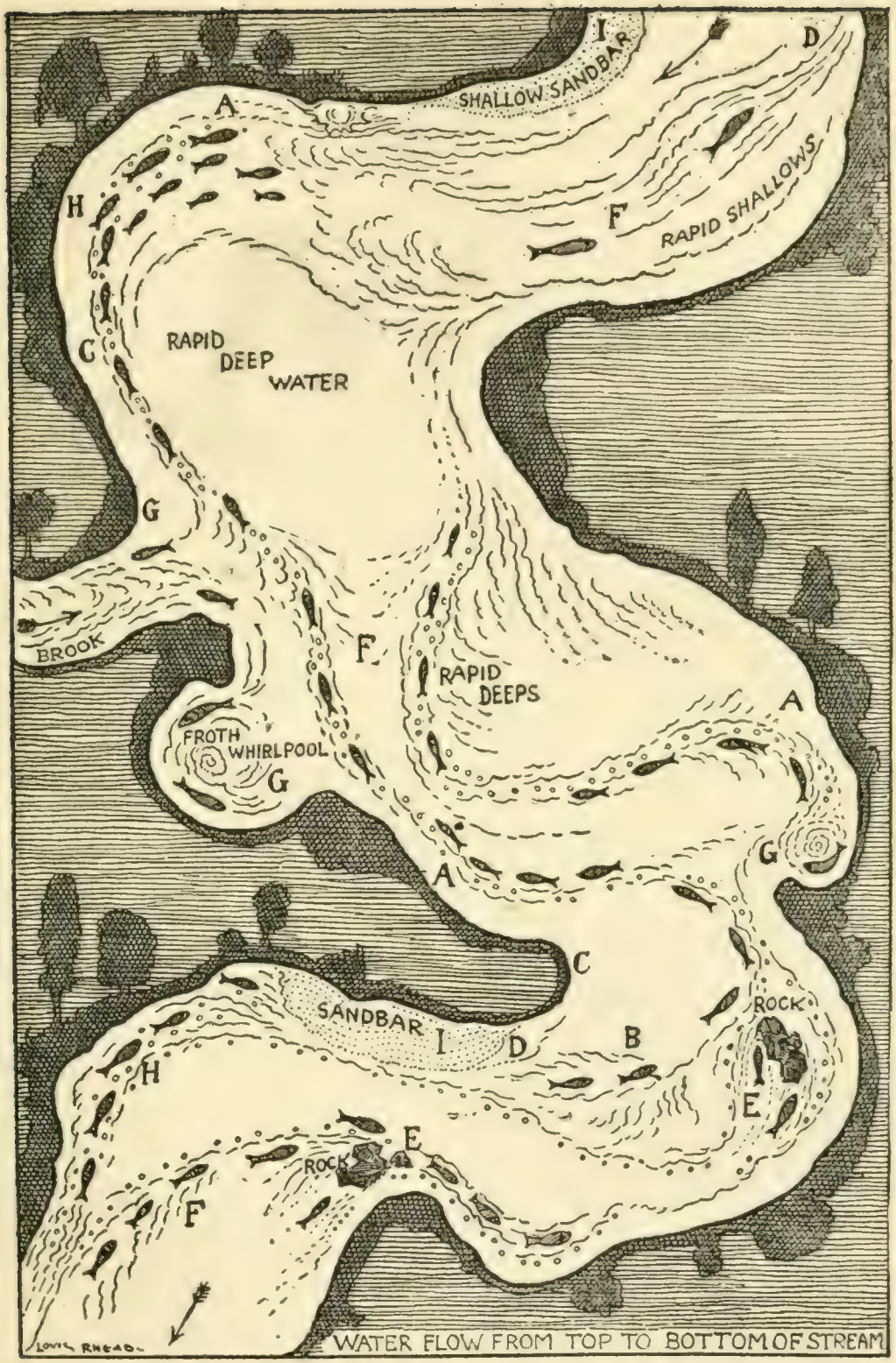
Every fisherman, if he has not already attained it, should cultivate the faculty of observation—that is, the training of the eye and brain in continued alertness in order to be equal to the trout in his cunning skill at evading capture. He should never permit his person to be seen by the trout;

with a wide sweep the eye should cover the entire surface of the water, even beyond casting distance; at the same time alert to note what insects are on the wing. These are some of the first important duties of the angler on arrival at the stream. The most important duty of all is to examine the aspect of the river, the eddies, runways, currents, the speed flow, and particularly the different depths of water. By such knowledge you learn the haunts where trout hide, though you may not see them. The annexed plan is here given to point out the favorite haunts of trout (more particularly brown trout) in a clear running stream with rocky or gravelly bottom.

They are the tail of a stream—that is, the end of a little rapid, or swifter-running portion of the current, as from top *D* to *A* in the accompanying diagram; the junction of little rapids formed by water passing round an obstruction in the midst of the general current, as *B;* and such tracks as *C*, where a chain of bubbles or little floating objects indicates the course of the principal current—which, of course, is chiefly dependent upon various deflections of the water, by projecting banks, rocks, deep water passing swiftly along, and shoals, and may often be guessed at, when

not sufficiently visible, by attending to the position of the banks. At roots of trees, or in places where the froth collects, and in little whirlpools, as *G*, and eddies, trout will often be found. All such places are by far the most favorable for sport; for insects follow the same course as the bubbles, etc., and are there sought by the fish. They never frequent sandy shoals as at *I*. It will be most often found the larger trout are on the scours or shallows, as at *D*, in the night, chasing minnows and other small fish. The greatest number of large-size trout gather together behind one another just below a swift rapid, as at *H*. In the day they are cautiously watching for food in deep holes, under hollow banks, or roots of trees or in the angles of rocks, as *E*. In May and June, when fish are lusty and plump, they are also to be found in the more rapid parts of the water, as *F*.

These remarks, although not strictly applicable to the trout of every stream, will be found useful for such streams as the Esopus, Neversink, Willowemoc, and Beaverkill, in the State of New York. This plan has been adapted to our use from one given in Ronalds's *Fly-Fisher's Entomology*, which specially refers to the English trout, *Salmo fario*, the same species as our own brown trout.



Plan of current formations in a winding stream—the haunts trout choose to lie in in wait for passing food

When you observe trout rising to feed, it is quite a simple matter to place your artificial fly on the spot, while the fish is down, and if properly placed, the right pattern offered, it will quickly respond, particularly if you cast up-stream. By so doing you take much less chance of being seen by the fish. But what we most desire to overcome is a situation when trout are not visibly feeding, which is most often the rule. A still more difficult problem is, in June, when insects are overabundant on the surface, to succeed in enticing the fish to take your imitation. There is still another situation where in July and August flies become scarce, and natural bait is being consumed on the bottom and at the surface. In this condition crickets, grasshoppers, caterpillars, and small minnows can be floated down along the surface to good effect, and at the bottom the trout-hellgrammite, caddis-creeper, and nymph may be fished by my new method with much greater success than could be attained with the artificial fly which this chart is intended to assist.

After consulting Chapter XII, *How to Use Nature Lures*, we start in to fish down-stream at the surface with a cricket or grasshopper as bait attached to a six-foot leader, and cast out just the same

as you would a fly. Standing on the sand-bar at *I*, you cast across-stream to *D*, let out line that it may float along the surface past the fish to *F*. Reeling in, you guide the bait along in past the tree-trunk to *A*. Still retaining the same position, you permit the water flow to take it along, guiding it to go in the path of bubbles, *A*, *H*, *C*, and *G*. You may skip the rapid, deep-water pool, and reel your bait slowly back to you, though at times you should give the bait a short jerk, and let it run back a yard or so; in other words, give as much natural-life movement to the artificial as the live bait naturally possesses. After reeling the bait entirely back, you may start over and repeat the cast, or walk down and take a position at *C*, then cast across the deep water to the first fish at the head of the rapid deeps and so let the bait float along the bubbles to *F* or below. Then work the bait back along the line of bubbles past the whirlpool, working the bait just inside the brook. Then let it run down again to *F* and back toward you along the bubbles past *G* to *C*.

During this course you will probably have had strikes in different situations, and with the way to handle it this chapter has nothing to do. The new position you should take is to stand in the

middle of the brook and let the bait float round the whirlpool to *G*, then reel back. Drop your bait in the bubbles, let it float past *F* to *A*, and guide it along nearly to the rock and back. Cast again to first fish at head of rapid deeps, and so work it to *A* and to *G* and return. The next position to take is just above sand-bar *I* at *C*, where you cast across to the rock, running along the bubbles on both sides one after the other, and reel back. A short cast in the ripples at *B* and return, then a long cast to the bubbles at opposite side, running down to the rock *E* and return. A fresh cast to *E* from a new standpoint on the sand-bar *I*, where you work round the rocks, then let it run down the bubbles to *F* and below—then back—making a fresh cast to the head of the rapids below sand-bar, you float along to the end and back.

This short descriptive plan of what part to fish and what to avoid, is very typical of most parts of a running stream. Being particular that bubbles be your guide, you cannot go wrong on a stream with its many varied trout haunts. Don't be deceived by what looks like a nice smooth, deep pool. Trout are in their favorite aerated water at each side of such a place, while the pool itself is usually the abode of suckers and chub. Re-

member you are fishing with floating baits that obediently follow where you lead them. You are not trying to show how beautifully you can cock a dry-fly on smooth water; you are doggedly, yet intelligently, stalking trout under most adverse conditions. Have no fear the lure will do its part to float, and to follow where you lead it.

We shall now go over exactly the same ground with bottom lure, weighted with lead, and fish with a different rig—a shorter line, and greater difficulties to contend with. Again please consult Chapter XII as to the proper way to use the rig and method for bottom fishing. Assuming we have two baits on, tied, one twelve inches above the round sinker at the end, which is a trout-hellgrammite, the other a little one-and-half-inch terror minnow, with these you cast to the various places previously mentioned. If the water is swift enough to carry the lead gradually forward, make a series of "pumps," *i. e.*, lift the rod high up and drop the lead farther forward. While the surface method practically does its own work by aid of the water flow, the bottom method requires you to move oftener from place to place in order to put your baits in the right positions, especially so *near by a rock*, or curves in the bubbles. In

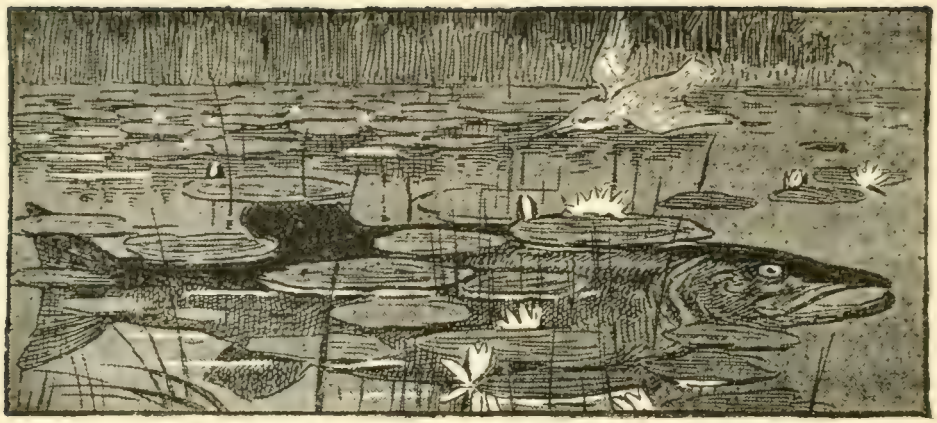
fact, bottom fishing by this method is a sort of bait-casting and fly-casting combined.

The prime object of this chapter is not *how* to fish but *where* to fish, and to attain the best results, you should have previously studied those chapters describing the right tackle and the right method, with pictures explaining fully what is necessary to be known.

Many fishermen have the mistaken idea that trout lie at or near the surface. Trout most invariably lie at, or near the bottom, darting to the surface for food and returning immediately. But that is no reason why the greatest care should not be taken to avoid being observed by the fish. Trout run up from their haunts at the bottom in an almost perpendicular line, never running far forward or backward to the domains of other fish. They are always poised with nose facing the water flow. By reason of its great shyness it is extremely difficult to obtain accurate knowledge of its habits by ocular demonstration. I have seen trout in a stationary position, in which it maintains itself in the most rapid streams. Even the tail, which is known to be the principal means of propulsion, can scarcely be observed to move, and the fins, which are used to balance it, seem

quite useless, excepting when it sees a minnow; then it will dart with the greatest velocity through the opposing current at its prey, and quickly return.

The station which it occupies in this manner is invariably well chosen. Should a favorite haunt where food is concentrated by the current be rather crowded by its fellows, it will prefer contending or fighting with them for a share of it, to residing long in an unfruitful situation. A large trout will chiefly frequent one place during all the season, in fact, for several seasons, if not molested or caught. When caught, after a few hours the situation is taken by another, usually a much smaller fish. You are sure to capture the largest fish where food is most abundant. It is indeed fortunate that the majority of big trout forage about from place to place after nightfall to prey upon minnows, otherwise the artful "native" angler would soon capture them after dark, on minnows or big worms in their favorite haunts he knows so well.



VIII

A DESCRIPTIVE CHART-PLAN OF LAKE WHERE FISH ABIDE WHEN FEEDING

We shall now specifically describe where bass and pike are generally wont to abide, the kind of food they take, the proper baits to use, and the whereabouts we may try for them in lakes and ponds.

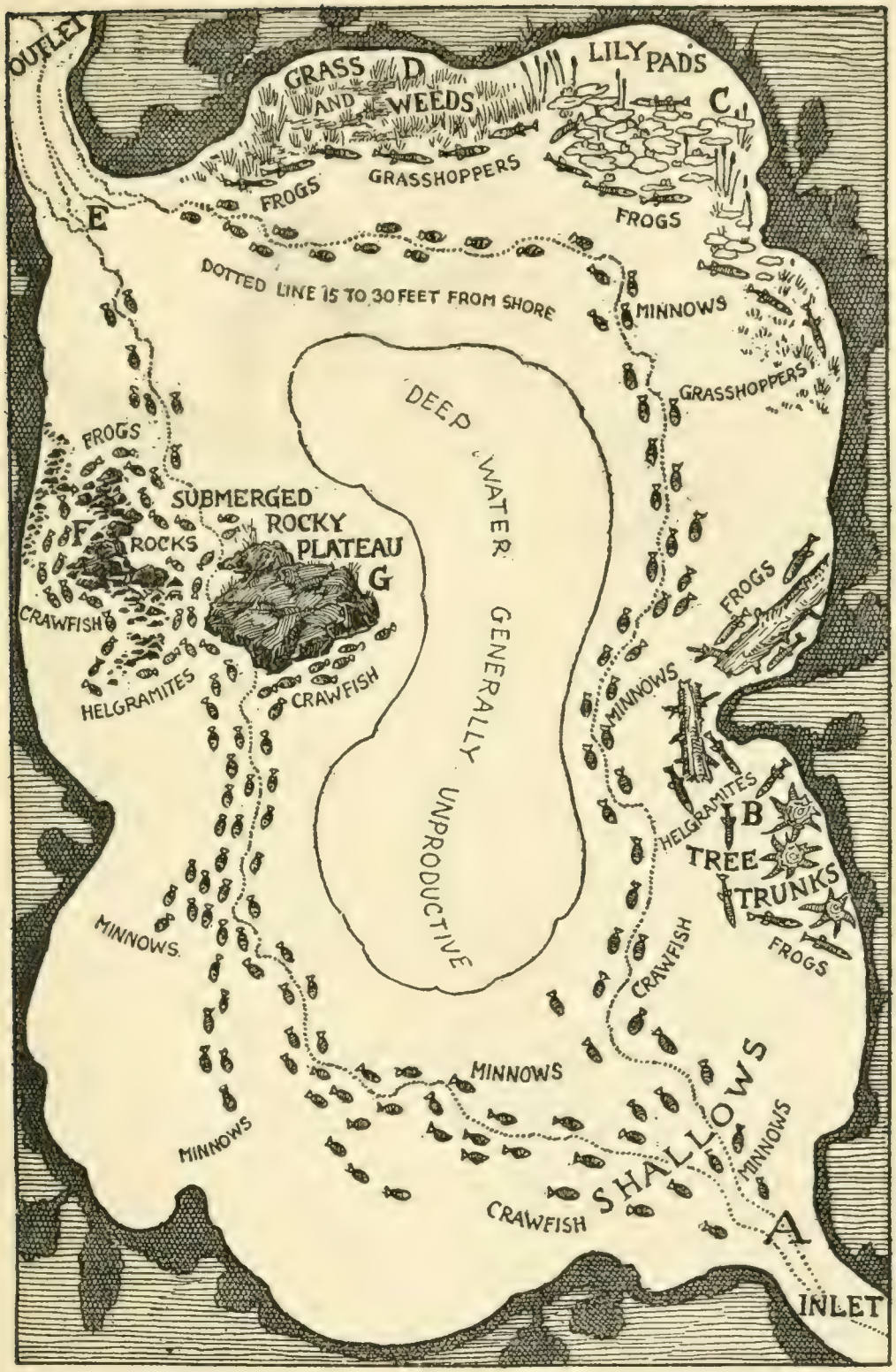
In shallow waters with muddy bottoms, inducing the growth of weeds, grass, and lilies, in from four to fifteen feet of water, we find that the fish food is mostly frogs, numerous aquatic insects, and their larvæ, which include dragon-flies, darning-needles, flying-grasshoppers, and the jumpers, shrimps, shell-fish, beetles, and various bottom creepers. In deep waters, having no aquatic sur-

face growth, with rocky bottoms and certain parts composed of pebbles and sand, upon which grow isolated tufts of aquatic weeds and bottom grass, the fish food is mostly numerous species of minnows, perch, sunfish, and the young of larger species, hellgrammites and crawfish.

Where a rocky plateau rises abruptly above the surface, from deep water or an island, the chances are that bass prefer to locate a few yards from it. Bass and pike do not usually lie in deep water at the middle of a lake or pond, where the depth is over thirty feet. A safe distance from the side to fish is from fifteen to thirty feet, more or less. Wall-eyed pike usually prefer, and are mostly caught, in the deeper parts. Lake-trout haunt the deeps, sometimes from one hundred feet to greater depths, rising to the surface in the spring to prey on lake shiners and other minnows. Landlocked salmon, like bass, choose waters of a medium depth, congregating in parts where food is most abundant; much, however, depends upon the nature of the food taken. In all instances food controls the situation; the habits are entirely subservient to the food problem. Many exceptional cases are, of course, always evident, and the reader must consider them when descriptions

are given to cover so wide and varied a subject, and many different species of fish with widely different habits.

The annexed combination plan of different lake conditions is an attempt to show at a glance the probable places and most likely spots where bass and pike are usually found, also the food they take and the different baits suited to those conditions. Neither bass nor pike are by nature wanderers; they never stray far from the chosen locality; and when this has once been chosen—always with a view to the best feeding-ground—they stay there, unless their food-supply by some reason is cut off—as, for instance, when bottom creepers, like hellgrammites, have changed to the adult state. Then a new food-supply is sought—minnows, frogs, and other foods. In lakes of large extent, like Chautauqua, the home of the banded muskellunge (*Lucius ohiensis*), the fish food-supply is ample, not only for the muskellunge, but for bass and other fish, so that little or no change of feeding-ground is necessary. Then again, after the young have grown to a fair size, cannibalism provides considerable food for various species, notably bass, pickerel, pike, and muskellunge. The prolific perch, which by some means or other



Lake plan to show where bass and pike take their natural food

is found in every lake and pond, furnishes probably more fish food than any one other species, with the sunfishes a good second.

As stated in the previous chapter concerning trout, the same rule applies to other fishes; that is, the largest fish are always found where food is most abundant. If fish stay where food is scarce, it is only because they are unable to do better or to migrate elsewhere. In describing the annexed lake plan, beginning at the inlet, *A*, which is usually sandy shallows and the part where minnows and other small fishes congregate—it will often be found that schools of bass haunt that section, especially at evenings, going back to deeper water in the daytime. Crawfish often choose to make their abiding-place in the shallows close to the fresh cool water flowing in the lake. Among the roots of submerged tree trunks, at *B*, is the favorite haunt of pickerel, and sometimes large bass. In such a place frogs and hellgrammites choose to live and breed; the frogs along the shore, the hellgrammites close by rotting wood. Following the shore-line we gradually get to shallower water where grass and weeds appear, growing just above or lying on the surface, till we come to the deeper water of the lily-pads, at *C*. Here the water may

be from four to twelve feet deep, where the larger fish—pike, pickerel, and bass—take toll of both surface and bottom food: frogs, minnows, various bottom creepers that live and thrive near heavy aquatic vegetation, flying insects and grasshoppers that make their feeding-places on or about the broad leaves of the water-lilies—where the pickerel and bass lying below frequently rise to get food.

Round about the grassy weeds, at *D*, is a favorite lair for pike, bass, and pickerel, in water from four to six feet deep. They are always alert to pounce on frogs, perch, larvæ and adult dragon-flies, also many flying and jumping grasshoppers. In shallower water, where tall grass and weeds grow above the surface nearer the outlet, is usually good fishing with frogs, grasshoppers, and crickets. If the outlet is shallow, the food taken is mostly minnows. When the edge of the lake, and the bottom for some distance out, is rocky, as at *F*, many bottom creepers live and breed. Hellgrammites and crawfish are plentiful in such a situation. The same is true of the rocky plateau, *G*, if entirely under water, but should it rise above the surface, making a small island, minnows and frogs furnish additional food. From *G* down to the inlet, the water running gradually deeper all along from

shore, numerous minnows congregate near the shore. It will thus be apparent that the wise and observing angler will do well to think awhile before beginning to fish in unfamiliar water, and he will soon become aware that lake conditions—that is, deep or shallow, weedy or bare of aquatic growth—have much to do with the intelligent pursuit of his favorite sport; that in some lakes frogs are plentiful—in others not at all. He can, however, be well assured that minnows and other fish food of various sizes are the chief diet in almost any lake or pond for all species of game-fish.

We shall now proceed to do a little surface fishing by casting artificial baits from the shore as we walk round the lake, beginning at the inlet, *A*. Attaching a three-inch bass-terror minnow, we cast from *A* all round the inlet, as far out as it is possible, reeling in the lure almost to our feet every time. Moving our position, we then cast the minnow round about the tree trunks, at *B*. If we don't succeed with minnows, we change our lure and put on the frog, a brown color, because that color is most likely to imitate frogs which abide in such a situation. Whether we succeed or not, we continue to cast the frog among the

submerged logs for pickerel, and out farther for bass, moving alongshore until we come to grassy shallows and try with a large-size grasshopper for both pickerel and bass, casting first near shore, gradually farther out to where the bass lie, at dotted line. From the corner bend below *C* we again change our lure to a green frog and try for the pike lying below the lily-pads. Going round the other bend, we cast toward *D* for pickerel and farther out to the bass, at dotted line.

Walking around, crossing the outlet, at *E*, we there take a stand. Changing our green frog to a brown one, we cast to *F*, quite near shore, and as far out to *G* as we can. Walking down alongshore from *F* we change our lure again to a minnow. If our previous effort with a minnow at the inlet, where we commenced, was effective in getting fish, we choose the same size minnow; if not, we try one smaller in size, a little two-inch darter, an imitation of a silverside. Casting to the dotted line, we proceed alongshore, till we come again to the inlet. Should it happen that weather and season conditions are right, and we get a fair bag of fish, we content ourselves with not making changes in the lures. If otherwise, we change from large to small, and different colors of lures, but

we firmly cling to the use of exact imitations of the fish food located on the chart.

We then choose another day, with favorable weather, to try bottom fishing from a boat, with a different rig that has a sinker attachment to carry the floating lures near the bottom, using the same lures with the addition of the hellgrammite and crawfish. If the wind blows and we have no oarsman, we row out beyond the dotted line to about fifty feet from shore, to anchor in selected places. We can begin by trying the rocky plateau, about fifteen feet out in the lake, from *G*, using as bait the crawfish and casting from place to place till a strike occurs. If not, we take up anchor and row around the line toward *F*, still fishing with the crawfish. From that we can change and try the hellgrammite in various rocky spots, changing the baits if unsuccessful, and continue fishing with baits that get success. From *F*, we row across to within fifteen feet of dotted line, at *D*, with green frog as lure, changing again to grasshopper and minnow if no success occurs. Should you desire to fish exclusively for bass, it will perhaps be best to fish the dotted line with a varied assortment of minnows, trying a change to hellgrammites and crawfish at such places as

B and *F*. If you are not successful in casting, and consider you might have more luck in trolling, you row along the deep-water chart line, using a large-size minnow as lure. Neither the frog nor crawfish is suitable for trolling, but with a light sinker you can troll with excellent results by using the hellgrammites, minnows, and large-size grasshoppers; and also the large-size cricket is almost certain to get bass.

By nature, bass are pugnacious, impetuous, Rooseveltian fighters, jealous of any moving object that resembles food within their vision, following after the lure for a considerable distance, to take or not to take. The inactive response of bass to our lures is not due to overfeeding, but rather to peculiar traits, in their habits.

Muskellunge, pike, and pickerel, also wall-eye, usually take a position and lie still at a distance of two feet (more or less) from the bottom, to run up and down, as the case may be, when, upon observing their prey, they dart like lightning after it, to return to the same spot to gorge it. Sometimes, to be sure, we observe members of the *Lucius* family lying still, basking in the sun near the surface, close to or under some heavy aquatic vegetation. At such periods they are not

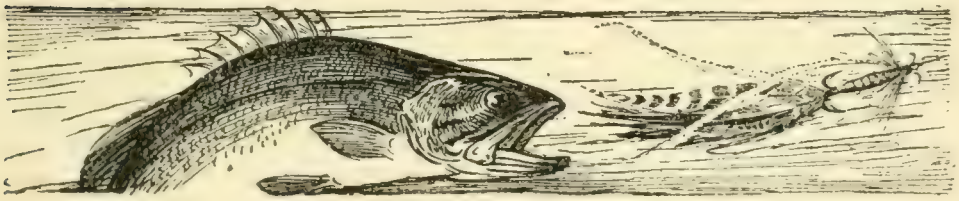
generally responsive to any lure, though I am inclined to think if an exact imitation of their natural food was moved within their vision they would dart for it instantly.

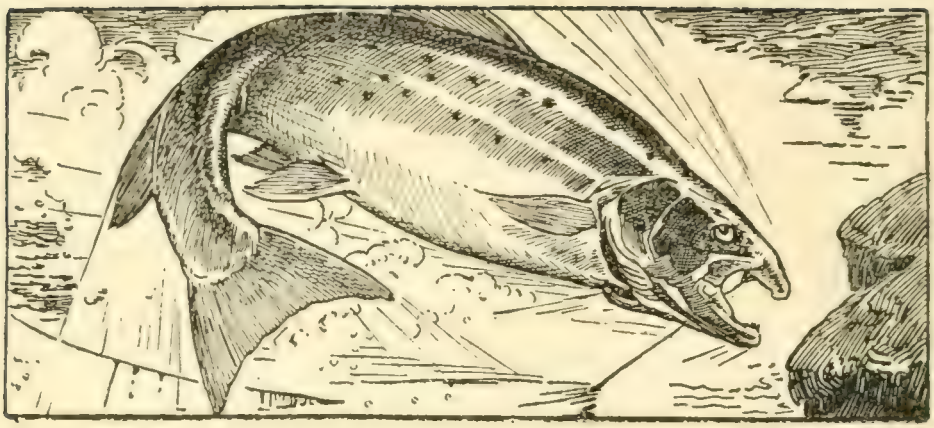
Some species of game-fishes have periods of inactive feeding. This largely depends upon the weather, the season, and the time of day, particularly is it so of trout, muskellunge and bass. At times, they seem to be utterly indifferent for a period; then, all of a sudden (as if a general commanded them to fall to), they begin in right good earnest to feed; not isolated cases, but every one of them. If you are at all observing you will often notice, shortly after sundown, a strange dearth of insects. Then the wind goes down, and all at once the air is full of them, and the placid water, so quiet before, bubbles all over with rising trout. This does not only appear in a limited area, but inquiries have revealed the fact that anglers fishing at the same time twenty miles up and down stream experienced exactly the change we had.

I have noticed this same apathy in bass, when I tried every means to induce them at the period when I used live bait; and in disgust I determined to quit—when they suddenly responded and I filled my basket in quick order. An instance of

Muskellunge feeding on minnows

this kind occurred late in July this year, when I caught fourteen bass in rapid succession on my small artificial crawfish, without moving an inch from the place I was fishing. I once fished diligently for muskellunge in Chautauqua Lake for four successive days without a single strike, under the guidance of a local expert, the lake and fish being a new experience to me. Then trying the fifth, a rainy day, I caught three in two hours, 18 pounds, 13 pounds, and 9 pounds in weight, which fully repaid me in splendid battles with leaping fish for my patient endeavors.





IX

GAME-FISH THAT LEAP ABOVE THE SURFACE ON A RESTRAINING LINE

Of the many fishes in American waters there are only fifteen that invariably rise above the surface when they feel the tension of a restraining line. "These are the salmon (both sea and land-locked), the black bass, the rainbow trout, the banded muskellunge of the Ohio Basins, the grayling, and occasionally the black-spotted trout of Western waters. Of the salt-water fishes that leap, there are only the tarpon, ladyfish, Spanish mackerel, the kingfish of southern seas, and the needle-fish of Key West, which is the most skilful acrobat of them all, either in fresh or salt water, often making double somersaults." Such are the

words of a famous practical angler of fifty years' experience, and I quote him because my own—small compared to his—exactly coincides, except that he fails to mention several game-fish named by Doctor Holden at Catalina Island, Cal., which include the tuna, swordfish, and several others—which is due to the list having been made previous to that time. He also leaves out what has since become one of our most famous fresh-water game-fishes—the brown trout (*Salmo fario*), best known in many localities as the German trout, because it was introduced into American waters by Von Behr.

But the brown trout is not German, having been famous in England centuries before such a place as Germany came to be what it is, and we hope to change the name to British trout. Many anglers will grade their conceptions of real sport by the practice of fish leaping, and with reason too, for here he makes his supreme and final effort to escape from the barb; not because it gives him pain, but because it restrains his freedom. The hook nearly always pierces the spongy, muscular skin of the upper lip when the artificial fly is used, and sometimes when live bait is used, though in the case of bass and pike, when allowed to gorge live bait,

such as frogs and minnows, the hook naturally pierces a tender part, and the fish at once tries to eject it. As he cannot do so, owing to the water's resistance, he tries to leap over it, and by doing so often succeeds in ridding himself of the offending hook with his hard bony tongue.

In the whole domain of nature the lives and habits of fish are least known, because least seen. In captivity their movements are entirely different from those of the wild state, so that it is to practical anglers more than to scientific men that we look for the information of this chapter. A number of game-fish leap in play, or for their food. Salmon are constantly seen making a bow-like curve in the air two feet from the water and then slipping back with barely a splash. I have seen brook-trout (*fontinalis*) leap in a like manner, sometimes only half out of the water for a fly, then again, seemingly in pure wanton joyousness, though I have very rarely had a brook-trout leap out after being hooked. It will dash hither and thither, but always under and low down, in short turns and quick darts. Bass break water more often than trout; in fact, it is rare when they do not. Once being aware of restraint, they leap one to nine times before being subdued.

Atlantic salmon

Salmo Salar

On quiet evenings we observe bass (where they are plentiful) rising clear from the placid water surface, both in play and when trying to catch insects—large moths, and even birds on the wing. It is very different with the muskellunge, whose food lies entirely below the surface, and his leap is of bull-like ferocity and fierce anger at the unusual restraint of the line. When he leaps it is like slipping out and sliding along like an arrow which has touched the water and is gliding above the surface. His long heavy body prevents his making a graceful curve like that of the salmon, whose leap is sidewise, and he makes an upright movement instead. In nearly all cases it is fish who feed on or near the surface that make leaps from the water after being hooked, and all have a strikingly different method of doing it. The bass and ouananiche are very similar in their way of resisting capture. They shoot straight out and for a moment their whole bodies quiver; then, turning, dive or slide back and disappear beneath the surface. By doing this they very often succeed in ridding themselves of the hook, especially if the water is running swiftly and the line is not taut. In such waters it is scarcely possible to land the fish that makes a run toward the angler and

then breaks to the surface close in. On the other hand, if he runs away to break, the line will often have sufficient tension to keep him on the hook. The natural habit of leaping for insects is to their undoing, for it gives the angler an opportunity to cast right to the spot where they lie when feeding, and if the flies cast are in any way similar to the natural insect on the water they are bound to rise to the feathery lure—and so the sport begins.

Only last spring I was fortunate to see a number of trout rising in a placid pool, and able to get near enough to cast to the spot without being seen. I succeeded in landing one after the other till nineteen lusty brook-trout graced the sward beside me. The cast being a long one, they were brought to the net away from the rest without difficulty, no obstacles being in the way, so the remainder were unaware of the danger; trout are bold and brave to rise at lure, yet equally timid at sight of angler. Had they been bass, I doubt if the same thing could have been done, because in leaping from the water with their mad rushes they would have scared the rest away, at least from feeding for a time.

The angry leap of any game-fish is a constant

source of excitement to the angler, even if he be a veteran at the game, because of a possible break or escape by throwing off the hook and getting away. Every fisherman looks on with admiration, and, especially if he be a fair sportsman, will often give them a chance to use their cunning skill in getting away to fight again later on; for every angler knows well that most fish which escape are very likely to be taken later on in the same spot. As the angler approaches a quiet pool at sundown, his blood tingles at the sight of a number of fish rising to surface insects. There is nothing slow in getting together rod and tackle. So impatient is he to cast his lure right among them, being fully aware that the rise may last but a few minutes, that he is often unduly careless of his fly attachments and runs the risk of losing what he might get in a calmer mood.

The fish may be browns or rainbows, both game to the core. I am unable to conceive anything more gamy than a rainbow of medium size, sixteen inches or thereabout. The exceeding rapidity of continuous leaps, sometimes wide apart; the extraordinary fear, or perhaps anger, displayed, and the many devious, skilful devices they show in efforts to get away, are one long wonder and

surprise to us. I have found in the right water that rainbows far exceed in brilliant aggressiveness either the ouananiche or bass; their movements are more rapid and their leaps more frequent.

I am perhaps unusually fortunate in fishing water where, in the matter of leaping, the brown trout is a good second to the rainbow, but there are many who hold contrary opinions to this, especially bass admirers, some of whom have gone so far as to make positive assertions that brown trout don't leap at all; that they are lazy, fat, cannibalistic, ugly brutes—and so on. They are welcome to that view. For many years up to this day my experience has been that with the brown trout I am well pleased to fight any time—and be assured I like the game of fighting fish, and shall as long as I live. My habit has been to make records of what each fish does in the matter of gamy display, and the finest record I have is of a brown trout of fifteen inches, caught on a shad-fly the 13th of May, leaping above the surface eleven times before being brought to net. It is a common occurrence for them to leap four and five times. I shall be pleased to have any sceptical expert accompany me any time the last week in May to this water and see for

Lawrence spotted muskellunge

Lucius Masquinongy

himself. The remarkably varied ways they resist is a never-ending surprise to me. Exceptions there are to every rule, due, of course, to season, the kind of water, and the lure employed. On rare occasions I have had brook-trout leap, but it is not the usual thing. Neither is it usual for large chub or pickerel, yet half a dozen of the latter fish, caught in Hempstead pond at Rockville Centre, L. I., leaped above the surface exactly in the manner of trout. But it is not the habit of pickerel to leap above the surface, neither is it of large perch; yet they do sometimes display that trait.

With the Montana grayling it is their constant habit to leap. They lie in shoals at the bottom of deep water; then, darting upward to the fly like an arrow, if they miss, go down just as quickly, but if they succeed in taking the fly, then begins a fight under and above the surface equally aggressive. Time after time their silvery slim bodies flash above in the sunshine like iridescent shells waved in the sunlight. With wide-open mouths and tall dorsal fins erect they seem like a part of the sparkling clear element which is their abode. The grayling is a fish that should be more widely known in Eastern waters. They have for centuries lived in amiable

relations with trout in English rivers, and could do so in American waters if the States had energy in favor of the people's welfare. Much can be said for and against the methods pursued by State hatcheries, but here is a fine opportunity to earn the gratitude of a multitude of Eastern fly-fishermen by planting the grayling in our Eastern trout streams. The season of breeding for this gamy fish would make it possible for anglers to open a grayling season for fly-fishing in August, to continue till the rivers are frozen—about January. Grayling are a good table fish. Though they never attain great size, they are as game as any fish that swims.

How very different from the grayling, by contrast, is the bold black bass! Ugly in shape and color, and not particularly fine as a table fish, yet what a fighter he is! Look at his mouth and eye when freshly caught, what a bulldog mug he owns! When we think of our speckled beauties as a comparison, we feel the two should not be allowed to lie alongside in our fern-lined creel. The bass is quite as ugly as a bluefish, and of about the same temperament. Yet what a wide circle of enthusiasts he has, popular all over the continent, North, South, East, or West. But the "simon-pure" method

—that is, casting the fly for it—has yet to gain a much larger number of adherents, and such cannot be had till the bass becomes a more epicurean feeder, which I fear will not come to pass.

A bass taken on the fly in swift-running water makes a tussle in which angler and fish are equally matched. They begin equal, and the winner on either side is not ashamed of his fight. My old friend and fishing companion William Keener of Roscoe, N. Y., one evening hooked a three-pound brown trout in that grand pool formed by the junction of the Willowemoc and Beaverkill. I was fishing the other side, and at dusk watched him walking up and down the pebbly shore. In the dim twilight I shouted: "What on earth makes you so restless?" He replied: "Got two on." Determined to see the end, I waited for nearly two hours in the moonlight, when at last I saw him slow up at a little cove, step in the stream, give a sweeping kick with his mighty hobnailed boot and out flew the pair of fish into the tall grasses on shore. To my utter amazement he had carefully played together a three-pound trout alongside a four-pound bass—a feat in fishing I have never seen or heard equalled. With a twinkle in his laughing eyes Bill said: "If that

fool bass had once started the other way, he would have got home, sure enough." It turned out that the bass had taken the upper fly while the trout was running at full speed and they both sped onward side by side. I have captured many doubles of bass, trout, and ouananiche, but never had a mixed double.

For pure, undiluted anger and fury watch a bass as he repeatedly breaks from the water; how he shoots up so unexpectedly in different parts of the pool; where, we know not, till we see him quivering in the air. He wastes no time in his eagerness to shake off the offending restraint; for a second we see him shaking his body in a cloud of spray, then, with his big jaws snapping he goes down, only to emerge again in another second or two, a hundred feet away.

If the mighty salmon had the same gameness in proportion to his size, a forty-pound salmon would be able to leap forty feet in the air, and nothing but steel wire would be able to hold his fearful rushes. A large salmon will sometimes make a long graceful curved leap; then, I have seen him shoot straight up, turn a somersault and dive straight down to deep water; in fact there is no movement he will not make in his lordly

Landlocked salmon

Salmo Sebago

anger. He will even run quite close to the angler, and so break water. No fish shows so varied a manner of acting when hooked on a fly. He will run for a mile, the fisherman following on as fast as his legs will carry him, fearful lest his tackle should part, and then, in the end, finds his salmon stock-still with his nose at the bottom and tail straight up, trying hard to rub the hook from his mouth. There he stays till he is well rested, and the angler makes every effort to stir him up and succeeds at last only to find that without a moment's warning he has again started for the surface with a powerful leap in a quarter little expected. Very many salmon break loose in the act of leaping. They know by experience a slack line gives the desired chance to flick the fly away.

The landlocked salmon is rightly named a leaping salmon, and for his size shames his bigger brothers in his acrobatic performances. How suddenly he appears and how quickly he is gone! I have seen him leaping up the falls but never out of the water in play or for food; he just bobs his nose above the "bruæ," or foam, to take in the flies; yet, when he is hooked and his freedom curtailed he is a veritable demon, tearing along up above and down below with incredible swiftness,

and all this in rushing, tearing water. His movements are like flash-light—there and here and gone. His trimly built body, large broad tail and fins have been developed by battling with the flood and torrent, so that his actions when hooked seem like an arrow shot from a bow.

I refer, of course, to the salmon of the Grande Décharge of the Saguenay. I never found the same characteristics (and others agree who know them well) in the Maine landlocked salmon. One would not expect it in the quiet waters of an inland lake as in the wild and stormy Lake St. John Falls. Nevertheless, this little salmon, place him where you will, is capable of fighting and resisting capture, not only by quickness and cunning, but by strength and energy. Not the least of all fine qualities is his habit of leaping from the water on a slack line.

X

TRIBULATIONS OF THE LIVE-BAIT ANGLER

No sane angler doubts the true fact that natural live bait, properly hooked and played, is the most perfect means to seduce game-fishes, and I frankly concede the point that if natural bait were now so abundant as to deem it wise to continue its use, the making and using of artificial imitations would be foolish. But we have arrived at the time —nay, past it—when all species of natural bait are very hard to capture and expensive to buy because of their scarcity; and most difficult to keep alive or in condition for use when you need them. Have I not in days gone by seen the tribulations of a

live-bait angler and gained wisdom thereby? Many a time have I gone through these troubles, and paid dearly for the precious value they gave, or intended to give, in sport. It may also be said, I have vainly argued with the wicked boy and his exorbitant demand for his frogs that looked so tempting—lying snug in a long row at the bottom of a wire-top cigar box. How different from mine was the masterful way in which the captives were held secure and safe; how easily recaptured if they got away. The large, fat man was pitifully helpless when these youthful tyrants insisted on a "quarter" each for these elusive jumpers that so mysteriously disappear an hour after the crisp bills have adorned the grimy paw of this miniature member of the "frog trust." What a look of disgust is pictured on the face of the most serene angler after playing and landing the first bass or pike to turn around and witness the last of the captives just diving from the edge of the boat into the water. The first impulse is to dive after them, or make a sudden move and a slip that nearly topples over the boat for a wetting. It is then, at such a time, the doleful wail goes up: "Why on earth didn't I get some artificial frogs? They do at least lie still and are a mighty sight cheaper."

But more deplorable are the conditions when boys are at a premium, not to be found either for love or money. We and the tackle are all ready for the fray; conditions are just right and weather superb. We lay down our creel and rod, and grudgingly trudge off to the swamp in order to capture the pretty little greenbacks in their native lair. With a self-satisfied air we say: "It's easy enough with a net!" But is it, dear brother angler? You all know what a "divil" of a time it is, jumping, running, then creeping on "all fours" with face splashed with mud, cuffs—if we have them—all wet and dirty; all the time muttering dire vengeance on the little animated bait fiends. We see plenty, feel plenty too, but catch and hold securely, we certainly do not. Meanwhile, time passes swiftly by; soon the "wicked hand of time is on the sign of noon," and we are still at it, still jumping, nearly with the same agility as the frogs themselves.

At this stage of the game there is this to say: our temper, while not exactly at boiling pitch, is quite warm enough to hunt for a pliable wand, or even a thick stick that is not rotten, and so, we vow, we'll catch 'em dead, if not alive. The fun grows apace. If we could only see ourselves

as we appear on these occasions, crumpled hat on one side, face and neck well coated with sticky perspiration, tie and collar hanging at the back instead of the front, indulging in sprightly gymnastics that would make a clown's fortune. All these things would be saved unto us had we only been provided with an artificial frog, and the thought flashes through our mind: "What a darned fool to forget such a treasure!"

The stout stick or pliable withe—as the case may be—is brought down with such a whack on the poor little beastie that if the aim were true, surely it would drive it two inches into the soft green sward. Sometimes the aim is true, but not quick enough. Then, like the big drum man, we begin to beat more savagely than ever, until our weary bones ache with pain. We at last take a rest and time enough to say to ourselves: "Come now, this is no gentle angler," and patience returns. We soon manage to strike half a dozen enough to stun them. We quickly box the precious though light burden, and about 3 P. M., get to work fishing.

But frogs are not the only live bait to vex the placid angler; digging for lampreys is another back-breaking, pleasing pastime. How cheerfully

we start off under the directions of an angling friend to that little sand-bar just below the third rapid, only about a mile away, and near by in the bushes a spade is hidden. We search but do not find, search again to find tracks of some previous angler who has been there, only to hide the spade in another place, and we hunt again in every likely spot until at last, in despair we pick up an old piece of iron-sheathing to do duty as a spade. Every bass fisherman knows that lampreys lie about six inches deep in wet muddy sand. Even with an improved patent spade work is hard, lampreys wofully scarce. We perhaps turn over a few little ones and these we grab quickly enough after infinite pains; secure three or four nice ones; even those we think, better than nothing, for the truth is, we are too tired after such labor to go at the fishing with the same vim we felt in the morning hours. Well, we have got them, we think, snugly packed in grass, the tin can securely tight in our pocket, convenient to abstract even when wading waist-deep in the current. But alas! The slippery eel was not made to handle with one hand, nor the rod to float obediently by our side. While capturing the slimy critters to hook, flop! goes our big one into the water. Another

works its way up the shirt-sleeve. In desperation, we place the rod between our teeth, to leave our two hands free; yet still another hand would be welcome to save us from simply having grass for bait.

We cast forth the hooked one to lose our sad thoughts in the rigor of the game. In half a minute the wriggling terror has crawled under a rock, and budge it we cannot, being wound around the rock, lying snug in a hole, past recovery. We get so mad, giving a jerk and a pull, that the line comes back minus bait, hook, and leader. With a sad and weary smile we find it to be the last bait, and we have no bass. It is then, more than ever, we cry in anguish: "Oh, why didn't we get artificial eels!"

As to minnows, the best thing an angler can do is to frankly admit there is more real sport in catching them than there is in bass fishing. Certain, we need not imagine it less lively or difficult. Who has not tried to drive a school of lovely minnows up a little brook, and with a net struggled to scoop them out of a convenient pool only to find the net held tight at the bottom by a rock or sunken branch which rips a hole right across it, and the water so muddy we are forced to wait fifteen minutes for it to clear. So we mend the net. By the

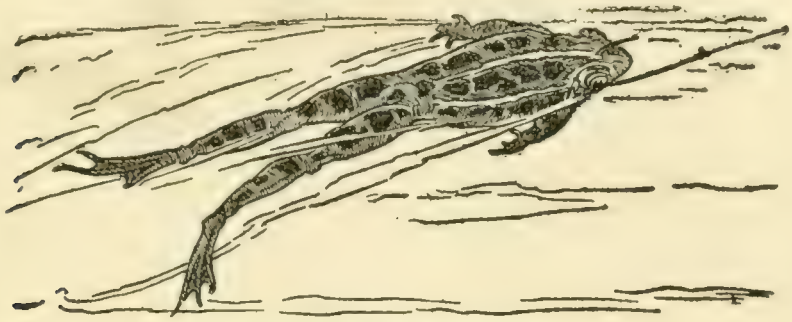
time it is fit for work, the minnows have disappeared. We travel still farther only to find they have scattered; it is scarcely possible to secure a single specimen, each darting away like a flash before the net touches the water. What angler is there, I ask, who has not seen minnows in swarms so thick he could scoop them up easily with his hands at times when he did not require them; and yet when he did, how wofully scarce and hard they were to get! Again our minds turn to the maddening thought, how much easier bass fishing would be if one possessed an artificial minnow. The remembrance of them lying so quiet on the white cards in the tackle shops is galling in the extreme; to our minds they were more true to nature, and to our thinking more killing than the live ones. Like the frisky frog, when he was captured after such infinite pains, the vexatious problem loomed darkly as to keeping minnows in fit condition for fishing some miles away.

We knew (some anglers don't) that the water should be kept at a low temperature or they would soon sink to the bottom or rise to float stiff with a ghastly paleness. Again, those white cards, upon which the beautiful minnows glistened day after day in the sunny window, without changing color!

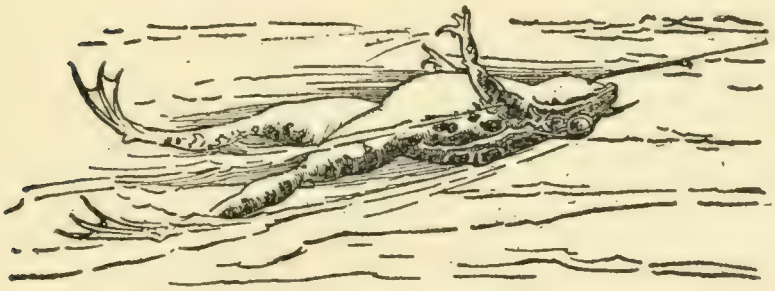
However, we wrap the pail of minnows tenderly in our coat to keep them from the sun, and hope for the best, which at the end of the journey is very poor. We find one or two little fellows at the surface, with wide-open mouths, gasping for what we know not, but we hook one quickly to revive him in the cooling stream. It works to a charm, and so we change the water to save what few still live. After all the troubles, griefs, and woes, we are perhaps repaid by two or three nice fish—perhaps not—it is certain we there and then make a vow to wire from the nearest station: "Send a dozen artificial minnows at once; hang the price, so long as they are good." So we wait day after day, till a letter comes —"Sold out."

The live-bait angler who can secure bait without much trouble and expense is very much to be envied, but certainly he is a rare individual, and uncommonly smart. In another way he is to be pitied in that he loses a mixture of spice and a fair amount of discipline that makes the perfect angler what he is famed to be, sweet of temper and kind of heart. The writer, years ago, ran the whole gamut of live-bait hunting; they are all alike as to capture. The wily "dobson" as well as the shy and retiring crawfish have in a way

their own peculiar habits and manners, and although in truth they are not quite so hard to keep alive, yet they have other remarkable traits that make them as like each other as one grape is like the rest of the bunch. The live-bait angler can



How live frogs should float.



How live frogs usually float.

with justice say the artificial-lure man has also troubles to vex him, and for that reason I have in latter years been trying to dodge these darker sides of an angler's life, and find a cure-all for some at least.

Last year I read an interesting letter from an angler, referring to his experiments on live bait,

in administering a very small dose of brandy in order to make the bait more lively in the water, therefore, enticing the game-fish in addition to forgetting his own woes. Every angler is aware that dead frogs, minnows, and other baits are less effective than lively ones. Frogs, after the first few casts, have a tendency, even when alive, to float, belly up. This indecent habit is neither pleasing to the angler nor agreeable to the fish, and I find the aforesaid brandy treatment to be a complete cure for that and other ills.

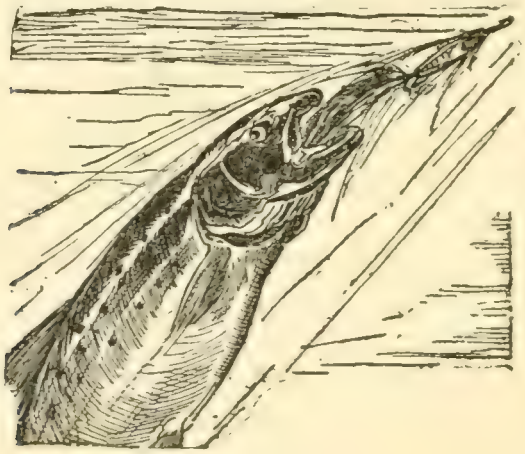
My first experiment was made on a six-inch chub caught on the fly when trout fishing. Providing myself with a small bottle, holding but two tablespoonfuls of the liquid, in order that I could easily pour single drops, I unhooked the fish, gave it two full drops, then placed it back in the water. The effect on its movements was magical. Swimming about at such a lively rate, going round and round with amazing rapidity, I felt at once convinced that the idea was a complete success. Such being the case with fish bait, why not on a young frog? The result would be even more gratifying. So I set to work, caught a frog, gave him a dose that started him kicking before even being placed in the water. After hooking it and

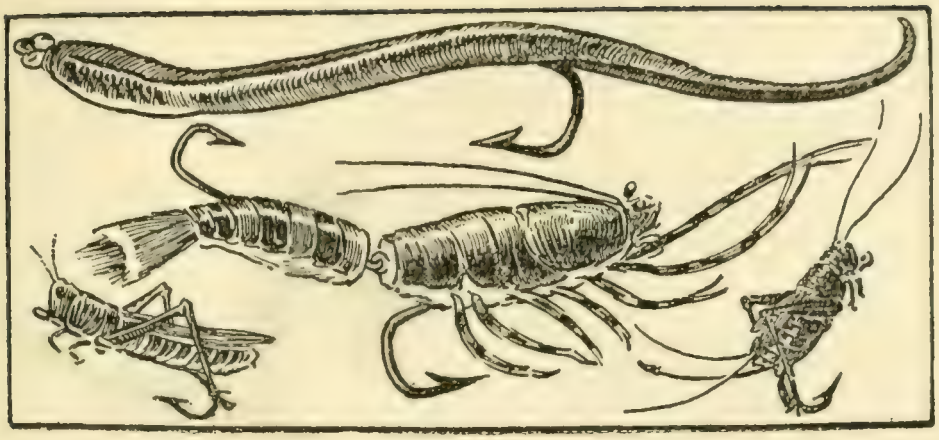
putting it in the water, it was the most joyful active frog I ever saw, swimming about in all directions in the most animated manner. Had there been bass or pike within a radius of fifty feet, it would have been devoured in no time. Of course, I was careful to consider that an overdose would be fatal; that the smaller the frog or minnow, the less be the necessary dose.

I am convinced that this plan of giving a stimulant to live bait not only induces the lively action and quick movement so valuable to the angler but it also helps to keep them alive much longer, if the fish do not at once take them. I also assume that whatever pain the frog has to endure, such a dose would be certain to lessen. Since this chapter appeared in magazine form, the country has gone bone-dry; so I advise those plutocrats who prudently hoarded a good supply to save a stock for this beneficent purpose.

After reading the foregoing, the childlike and trusting amateur will, I hope, perceive that a wise selection of the best lures or self-made ones, however crude, should be part of every fisherman's kit; that is, if he wants to catch fish and the time at his disposal is short; otherwise, for the greater part of the vacation he will be everlast-

ingly on the jump for live bait. Five dollars spent in lures is a mighty good investment compared to that required in purchasing live bait. There is trouble in lures as in live bait, but of a different kind, which the amateur will soon find out for himself, and he will at last conclude, as I have after many years' practice, that angling is a curious mixture of pleasure and pain—the latter most often predominating. All the same, we like it, and are never tired, whatever the result may be.





XI

DESCRIPTION OF SOME NEW IDEAS FOR FLOATING NATURE LURES

Anglers so often write: "I don't need or want a bait to float—I want to fish on the bottom." Herein they are either entirely wrong, or they misunderstand the situation. They do need a floating artificial to fish on the bottom, and after they get to know my method, they write to confess that they were wrong. Indeed the crux of my entire effort is to avoid the faults of commercial baits made by machinery, which, if you allow them, lie dead, inanimate on the bottom, whereas my baits are made to float suspended in the water, at any place or depth you desire, from a few inches off bottom up to the surface. I don't expect an-

glers to fish the surface with a crawfish, hellgrammite, or even frogs. Nevertheless, if fish can be persuaded to run up to the surface where you are able to see them grab it, that is a condition very desirable indeed; far superior to bottom fishing. Aside from that, it is a very comforting thing that you have no fear or worry about snags to lose bait, leader, and a piece of good line. It is no disadvantage that a bait is made to float; quite the contrary. I could make lures considerably easier and cheaper of heavier-than-water material. In fact, they could then be made by machinery to retail with a profit at a "quarter each." But that would be no improvement over the present output sold in the shops, except that they could very easily be made more lifelike and artistic than they are now.

Nobody, so far as I am aware, has yet attempted to make trout flies by machinery; a most detestable thought anyway. They require hand-work combined with brain-work, which is art handicraft, a distinction so superior in results as to preclude comparison. Nobody, I am well sure, can make these nature lures by machinery; like flies, handwork is the only way to do it. Three important things are required not hitherto done, which I am

making efforts to do to make the artificials attract the fish. First, to make them artistic and true to nature. Second, to have them act in the water like the creatures they imitate. Third, to plan a method where the fishing is to the angler what indeed it should be, a fine art, withal humane.

With this preliminary, I will briefly describe the principal baits, so that the angler may, with the aid of pictures, get a better knowledge of the detachable parts and other features that are original to them.

Beginning with minnows, which are of great variety in shape, color, and size, from the tiny inch terror to the five-inch-hook shiner for lake-trout, they have become by years of tests and trials in a sort of evolution effective, substantial baits, perfectly well balanced to swim like a natural fish. By advice of hundreds of experts' suggestions, the hooks are being well placed to catch and to hold. The attachment of leader to eye is exactly like that of a dry-fly. All the minnows up to three-inch hooks are so light as to be easily fished like a fly, with the additional value of being used either in spinning or casting. The proposed new method makes them capable of being trolled at the surface or fished in deep

water, an accomplishment possessed by no other bait.

The various-sized minnows are all made in two-color combinations—red and gold, blue and silver—made so to suit the color of natural food-fish in as wide a territory as the northern continent. The red and gold is a greater favorite in Texas, California, and Pacific coastal States, and in certain parts of Canada and Maine. I am told by those who use them, the red and gold more nearly imitates the reddish tinge of their minnows. In the Middle West, from Montana to the Eastern seaboard States, the preference is decidedly in favor of blue-and-silver minnows, which coincides with my own practice and experience of Eastern waters. While I have captured both trout and bass on the red and gold, I nearly always put on the blue and silver, because the fish food is mostly of that color. The darter minnow, a later invention, not yet widely used, is without the feather plume, and made in sizes 1½, 2, 3, 4, 5 inch body. It is painted to imitate young trout, perch, and silversides, and relies entirely upon an exact imitation of nature. The primary object of the feather plumes on the back of various minnows is to attract attention by the peculiar wavy motion

Tiny cricket and grasshopper for brook-trout

Brown and gray Maine streamers

Three-inch terror for trout

Three-hook terror for bass or trout

Four-inch silver darter for bass, pickerel, and trout

Two-hook gold terror for bass and trout

Two-inch silver-feather minnow for bass or trout

Four-inch gold chub with plume for lake-trout or muskellunge

Gold, silver, and white terrors for trout and bass

Gold and silver tiny terrors for trout

Four-inch silver shiner darter for lake-trout or muskellunge and salmon

Six-inch silver shiner darter for large lake-trout and muskellunge and salmon

Three-inch silverside and young brook-trout darters for bass and trout

Red-devil hackle minnow for bass

Three-inch gold-feather minnow for bass or trout

Gold and silver double-hook tiny terrors for brown and brook trout

Bass half-ounce weighted minnow

Gray and brown floating night-moths for bass and brown trout

Under view of bullhead for bass and rainbows

Gold and silver shiny devils for bass and trout

FLOATING ARTIFICIAL NATURE MINNOWS

of the feather, so like the waving tail and fins of a minnow. After much testing with or without plumes, the former has been found to have no disadvantage, except that the feathers become ragged from constant chewing by the fish. The advantage is additional attraction from the waving colors. The long, feathery plumes, especially peacocks' herle, are decidedly more enticing to both trout and bass. That the simple, plain body does catch fish, I have many proofs of my own experience, and I should like very much to discard the trouble and expense of feather additions to the minnow's body, and hope to do so when demand calls for it sufficiently to make it generally satisfactory, replacing it with a minnow compact and durable for several seasons. The most desirable thing is perfect spacing or placing of hooks, and making the bait swim upright with a rapid motion through the water, which, after infinite trouble and changes, they now do.

While I make, on demand for many anglers, the double and treble hook minnow, after thoroughly testing them to be sure they are effective, I rarely use them myself, because, I am sure, one single hook rightly placed does not miss. Trout as well as bass open their mouths wide for the minnow, clos-

ing it almost instantaneously; were it not so, a live minnow would escape. Rarely indeed do I find in the stomach a cut minnow or even one which has been torn by the teeth; yet teeth of brown trout are large and many. It is not often that I have brown trout get off, for in closing the mouth the hook takes hold and the barb is fastened to the flesh before they perceive the fraud (for base fraud it rightly is). The case is different with a fly, which they take more delicately; just a nip, very often a miss, because the hook is small, and quite often, after dashing above the surface, they flick off the fly with their tongue.

Personally I prefer the small minnows, even for large fish. The inch and two-inch minnows very well suffice for good-size trout, say sixteen inches. If you know where a big fellow lies, his capture is more safe when once hooked on a three or four inch hook. I hope to induce anglers to see this view, so that I can reduce the size and variety of minnows. The big four-inch and five-inch hook gold chub and silver shiner are both alike in construction and size; the only difference is one is gold and red, and the other is silver and blue. I cannot as yet judge whether they are most effective in spring or fall. If numbers in demand were conclusive, the fall would win. But it is quite

possible many more anglers fish for lake-trout and muskellunge in the fall than they do in the spring. The tendency in demand for this particular minnow is for larger size and bigger hook; the back feather plume is a more conspicuous feature, larger and more bushy, but I am making this minnow almost entirely bare of feathers, to produce an artificial shiner compact, durable, and strong. Now that I have acquired a shining, untarnishable metal for the belly, and have tied the back well and firmly, the angler will have the perfect trolling shiner for the heavy game-fish. I have supplied it on request to several Pacific coast anglers who wanted it for trial on the Chinook salmon, but no reports have been received, good or otherwise. This I very much regret in cases where I am unable to make personal tests. If my baits are not effective in a certain locality, I ought to be the first to know of it, in order to continue further efforts in perfecting them from any suggestions offered.

Before concluding this reference to my artificial minnows, I would ask the reader to carefully examine the colored page of minnows and other food-fish, to note how beautiful and varied are the forms and color. They are only a very small selection of the many species and varieties found

in various sections of the North American continent. It will be seen at once how very evidently impossible it would be to exactly imitate any particular one for general use in all localities, and I believe the plan I have adopted is the best, viz., to make red and gold, blue and silver, the principal colors. No colored representation, however perfect, can produce the silvery or golden sheen of these fish as observed in the water. All the artist can do is to convey what is called the "general effect" of glistening brightness. Salmon flies are an example of an attempt to get at the effect mentioned. I have tried everything with the limited materials at command, even to making a floating painted small minnow, copied exactly from the colored pictures, with the belly creamy white in place of shining metal. Trial after trial with all the skill I know, proves that it does not seduce trout. Immediately a change is made to the shiny terror minnow, I get strikes from chub, pickerel, perch, bass, or trout, whichever I am fishing for. I have finally concluded that my confidence in a metal body shows it to be by far the best, so that the shiny devil, hackle minnows, various-sized terrors, and feather minnows cannot be improved as far as I am concerned.

Very little description is necessary concerning the remainder of the nature lures which are all made to act in the water exactly like nature, and will, as it were, speak for themselves. The green and brown frogs are constructed to float right, with only the head above water, so that they will not turn over with belly up, and the movable legs will hang down when in repose; but when moved along, the legs spread out as in the act of swimming. Both the large size and the little jumper frogs are solidly built, so far as possible weedless, and are most attractive lures.

The bullhead should rightly be included along with the minnows, having a solid silver belly, with dark-colored body. It has been used with success for rainbows and bass.

The crawfish is primarily a bass bait, with body hook and detachable tail hook; it is painted on the back in light brown, with underbody pale cream to exactly imitate the natural creature. I have made a varied selection of grasshoppers both in size and color, copied from numerous species, ranging from the large three inch down to the tiny little red grasshopper on No. 10 hook, specially tied for small brook-trout.

Both the bass-hellgrammite and winged hell-

grammite are so made in form as to be suitable for trolling as well as casting. Swimming upright, they are attractive and deadly bass baits. They have taken bass in every kind of water—at the surface, midwater, and at the bottom in both swift and still water.

The caterpillars, made either with treble small hooks or one large hook, have brown body and hackle. Another is done in black, and there is also one in gray. The large blue dragon-fly, up to the present, has only been used, to any extent, in the South and Southwest: Florida, Carolina, Tennessee, Texas, California, and other States. It copies the insect true to life, and is large and with a powerful hook suited to the big-mouth bass, by which it seems to be preferred. For the cricket I have made three different sizes: a big one for large bass and trout, a medium, and one quite small for average-size trout, which is very effective from early spring to fall. The lamprey is the only "heavier-than-water" bait I have produced for both casting and trolling. The peculiar wriggle natural to the creature is well imitated by two twists in the hook. But a later imitation floats and swims along a short distance below the surface, giving the same lifelike wriggle with

Shrimp

Large crawfish

Green frog

Lamper-eel

Dragon-fly

Large grasshopper for bass

Green grasshopper

Double-hook caterpillar

Darning-needle

Yellow nymph-creeper

Caddis-creeper

Trout-hellgrammite

Large bass-cricket

Brown frog

Bass-hellgrammite

Bass winged hellgrammite

FLOATING ARTIFICIAL NATURE LURES MADE FROM LIVING SPECIMENS

the additional advantage of not sinking dead on the bottom by its weight. It is colored true to life, with hook attachment set to best advantage for a good hold, and will give good sport, saving a lot of worry in procuring live bait.

Reference to trout-hellgrammite, caddis-creeper, and nymph-creeper will be found in Chapter III. In order to further my theory of the efficiency of metal bodies, I invented a new set of six dry and wet gold and silver body fly minnows for bass on No. 6 hook, and trout on No. 10 hooks, named after the most famous and beautiful natural trout streams in New York State.

Their effectiveness depends altogether on the brilliant shine of the body in the water when in swift motion. After two seasons of tests in many waters by myself and a number of experts, they have been found to be most effective and deadly fly minnows under any conditions whatever. To make it possible for anglers to use at a very moderate price, considerably lower than I could make them, they are under my direction and from my patterns tried by the best fly-tryer in England. With each set are given printed instructions showing under what conditions they should be used.

No. 1—Brown. Neversink has brown-speckled wings, brown-speckled hackle and tail whisks, with gold body.

No. 2—Black. Willowemoc has black wings, black hackle, bend and tail whisks, with gold body.

No. 3—Red. Esopus has rich brown-speckled wings, orange hackle, red head, gold body, tail whisks, red golden pheasant.

No. 4—Dark gray. Beaverkill has dark olive-slate-colored wings, gray hackle, black head, silver body, black tail whisks.

No. 5—White. Battenkill has white wings, gray-speckled hackle, black head, silver body, gray-speckled tail whisks.

No. 6—Light gray. Mongaup; gray-speckled wings, green head, white hackle, silver body, gray-speckled tail whisks.

This set is used in regular fly-casting method, both dry and wet. I have found one fly effective, but three can be used on the same cast for trout, if desired. For bass fishing one fly is enough, and the choice entirely depends upon weather and water.

This set of six fly minnows was originally made only on one size hook—No. 10—but later quite a number of anglers requested a larger fly and hook on all six patterns for use in bass fishing, so that I have had a quantity tied on No. 6 hook with wings much larger in size. If bass can be persuaded to rise to any fly, they will surely take these, when

played under water in rapid darts, and quick flashes along near the surface or down below. For lake fishing, especially, they will attract bass if you place split shot on the leader and allow them to sink near the bottom, making animated rod-tip jerks. Personal choice will dictate how many flies to place on the leader. I generally prefer a single fly on the leader to at times fish it dry at the surface, but when I feel sure a number of bass, or even trout, are congregated together in a pool, I use two, and sometimes three, flies frequently to get a "double." Such a thing occurs mostly when one fish is hooked and running about; the swift movement of the remaining flies attract other fish to them, and they, too, get hooked. A situation of this kind requires most careful handling to get both fish properly netted.

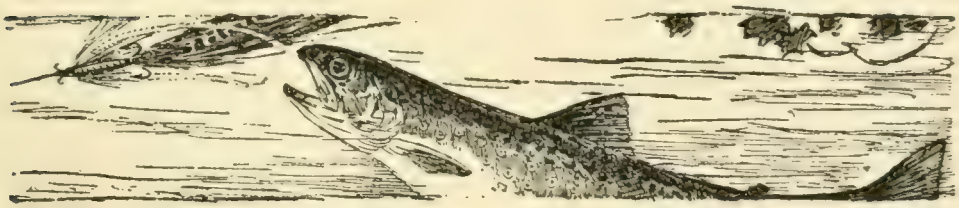
The latest darter minnows both for bass and trout are all made with the hook placed right under the vent, viz., about the middle of the belly, with as strong and large hooks as the bait permits. Anglers will find them superior in several ways to the spinning minnows of soft rubber and gang-hooks. These hooks are objectionable because of the difficulty in releasing several treble hooks; also the spinning causes much trouble in

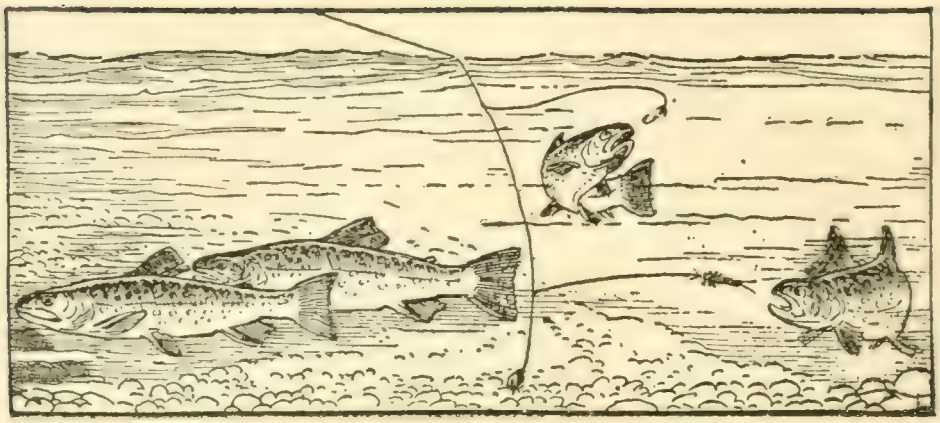
twisting a very thin line. If by imperfect play the amateur fails to make the spinner spin, it at once becomes ineffective, and often after the cast the gang-hooks get entangled with the leader, so far as my own experience goes.

No such defects will be found with the "darter." The amateur can play it with ease; in fact, you can just let it loose in running water, near or far, and it gayly swims along near the surface of its own free will from place to place, just like the natural minnow. When grabbed, the hook holds securely, is quickly released, and ready in a second to resume operations. Its natural attitude in the water, its effectiveness, is not interrupted for a moment by not spinning or working right. This same happy condition for the angler's comfort applies equally well to the different size "feather" and "terror" minnows, which, immediately they touch the water, work right, and continue to work right till grabbed by the fish.

After finding the two and three inch darters so effective for browns and rainbows, I concluded that the big five-inch silver shiner and gold chub, used for pike, muskellunge, and salmon, would be vastly improved if made on the same lines, having a powerful hook of large bend placed right under

the middle of the body, and the upper part bare of feathery plumes; with a solid mass of shining silver underneath, and the upper part painted true to life. Both for trolling and casting some lead is required to keep them down, the weight depending on the rate of movement in the water. The "streamers" with hackle head and solid-silver body are made in three different colors, brown, gray, and pure white. They are an improvement on a pattern sent me to be made for a well-known Maine guide, whose patrons have used them with excellent results. They are made either with a strong single or double hook. As they are exceedingly light, they require some lead, the weight being dependent upon the rate they are trolled through the water. Lead is also required in casting if the distance cast is over thirty feet.





XII

HOW TO USE NATURE LURES BY A NEW ADVANCED METHOD

The method of fishing my nature lures here given is the result of experience gained in testing them over a period of five years. They are not intended to be hard-and-fast rules, but guides and hints. They are applicable, I think, to any other lures lighter than water, and I am sufficiently catholic to agree with any angler who has a desire to make his own rules, should he find any better. What I try in every instance is to do as nature does, or as near like it as I can. I am familiar with all the methods pursued, both here and abroad, both by reading and practice, and so far as I am aware I cannot be accused of taking a false posi-

tion in stating my method to be a new one and a decided advance on the existing methods now in vogue in lure fishing. The difficulties to overcome have not by any means been slight, and that is why five years have been spent in what has been accomplished, the winters in study and the summers in practice, yet I readily concede there is still much to improve in attaining perfection. My definition of perfection in angling is: to practise a method that is fair to the fish, to give it some little chance to display its gamy qualities; that is sane for the angler, where he can get the most and the highest form of sport with the least cruelty; that is safe to get the desired result at any time or place he so chooses. This fair, sane, safe policy naturally includes a certain amount of intelligent study of all aspects of nature, and the creatures that abide on land, in the air, or in the water. This study, undertaken in a proper spirit, will in most cases prove more engaging than the actual fishing; at least, I have found it so the more I learn of it.

All experts and thoughtful anglers both here and in England consider dry-fly fishing the highest art of angling yet practised. Why do they consider it so? Their answer is: "Because you use

a fly that is an exact copy of the insect fish are at the time feeding on." You are supposed to cast it so that it floats cocked in the water, exactly like the natural insect; your fish rises to the artificial imitation within sight of your vision. Nothing more is claimed for this highest art of fishing.

My aim and desire in the beginning was to do exactly the same thing with all others outside of insects that game-fish consume as food—not only trout, but all fish caught on rod and line. However long it might take, and with a determined resolve to buck up against all difficulties, I made up my mind then, as now, in a cheerful spirit and a perfect confidence that I should win out. If others do not see it, I still retain the satisfaction of practising it alone, please God, for some years to come.

With every gradual improvement made in each lure, a separate test has been made, with the result that every game-fish has been taken on the lures, either by myself or by others, even to the Atlantic salmon, a twenty-seven-pound fish captured on my minnow by an angler fishing in Novia Scotia.

With so radical a change as these nature lures, it is necessary on the part of the inventor to de-

vise a proper method in keeping with the advanced step made in the lures, and the method in brief is really a combination of bait and fly fishing, casting out each lure as you would a fly; then reeling them in like a minnow, no matter what creature is the lure. The knack of casting a light lure with a long rod is a little strange at first to those used to casting the fly, but with a little practice, which is hardly possible to describe, one soon dexterously places the lure quite a distance, at least sufficient for the purpose. One suggestion of value is, if there be sufficient room behind as you let out the line, your forward cast should be slower every time you lengthen the line, both in back or side cast. At first you will cast as I did —too fast, forgetting the important thing: the lure must go backward the same distance as the previous cast, and the force of the next cast takes it farther ahead. The only lure I don't attempt to cast as a fly is the frog, which is far too cumbersome to cast on a light, long trout rod. If the rod be nine feet, I draw eighteen feet of line from the tip—cast it back, and by a side-sweep forward cast manage to slide out ten, sometimes fifteen, feet of extra line. Including the rod, that makes forty-two feet distance from you, which is suf-

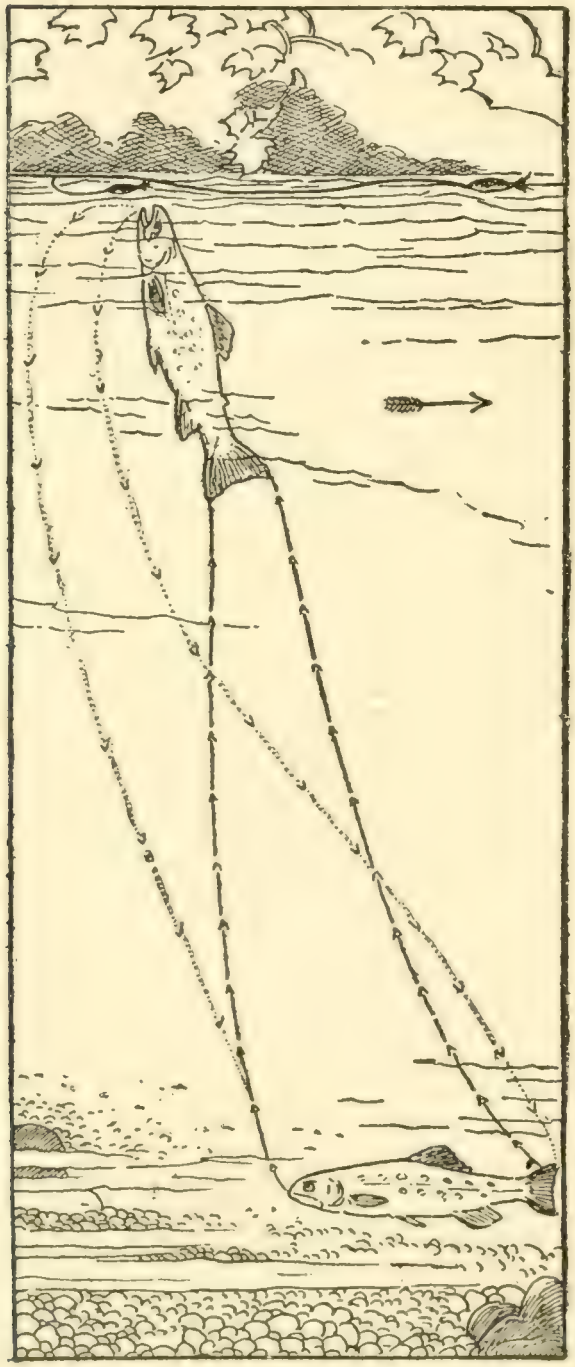
ficient to get a strike from the fish on its way back at least thirty feet. I often get bass taking the lure within ten feet of rod tip.

In river fishing it is only on rare occasions you need to cast. I much prefer to select places favorable to the lure being carried along by the water flow. It so happens trout and bass, or salmon, lie in favorable positions to where the lure can be made to run just over them. Strange as it may seem, many casts—indeed more casts—get a strike going from you, than coming back. This unexpected thing is because the line bellies out by the force of the water and turns the minnow head first downstream. The trout on rising, turns to follow after, taking a much better hold than it does on a stiff full-stretched line on its backward run. This same thing often happens in fly fishing. In the swift runways where you know big trout lie, behind rocks down below you, it is best to cast the lure right across it to quieter water and permit the lure to be gradually forced across, and back toward you far below—with extra line out.

The hardest condition is when the river is so wide and deep that you cannot get the lure to the spot required. The best way is to get as near as possible to a current that will carry a floating

bait down from you. Currents are always fruitful places to guide your lure.

Before leaving the subject, I consider casting by no means so important or difficult to do as the manipulation of the rod tip, which is intended to work the lure so that it acts alive when viewed by the fish. To do so is art, pure and simple, and therefore it cannot be taught. Neither can it be thoroughly well done unless you are familiar with the antics of the creature your lure imitates, either at the surface, mid-water, or bottom. Experienced live-bait anglers will understand best what I mean —the peculiar half swim, half jump of a crawfish; the wriggle of a hellgrammite; the swift dart of a minnow—all these various lures require quite a different treatment in playing, and, in doing so, your interest is aroused all the time till a strike is made. You cannot sleep or dream, you cannot even smoke, your entire attention must be on the lure all the time, and the best results are obtained by the continuous movement of the bait in the water. More so, when the different-sized minnows are used. In nature minnows dart about with astounding speed, especially when scared by large fish. You cannot begin to imitate it in quickness, except in leaping above the surface, which



The rise-to-surface lures and return.

can be copied perfectly, by a short twist of the wrist.

In bottom fishing, the required action is entirely different, because the sinker keeps the lure down. The tip needs to be raised quickly, instead of with a side jerk. Another quite different action is required for the small bottom nymph, caddis-creeper, and trout-hellgrammite, which are described in a separate chapter devoted to them.

We now come to the best rig to use

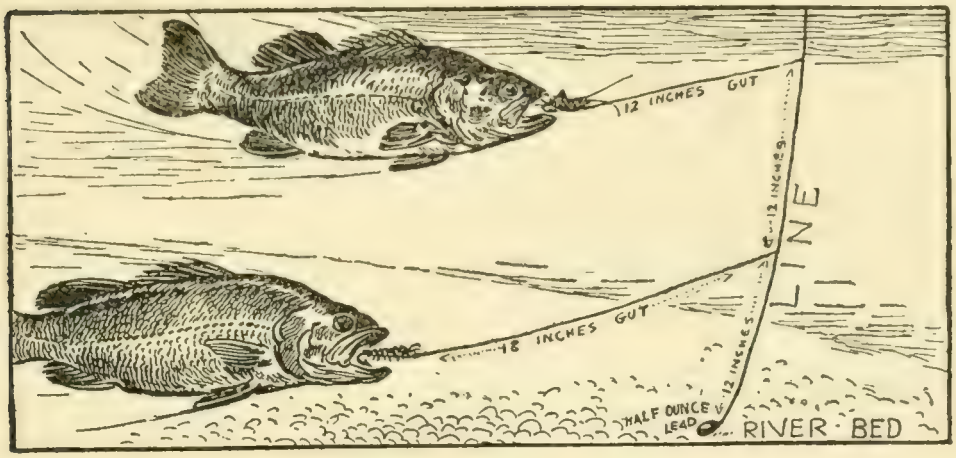
for these lures, and, assuming the angler to be one familiar with fly fishing, the regulation trout-fly rod, reel, and line, is best to cast these light, floating lures for bass, trout, salmon, or pike—both near the surface or on the bottom. For the heavier and larger lake-shiner, with five-inch hook, a well-built rod is more safe when fishing in deep water for muskellunge or large lake-trout. What I consider of the greatest importance is the leader and the way lures are attached to it. Each and every lure must have a gut leader, six feet long, more or less—not less than three feet. These light lures will not work or float attached to the line only; gut leaders are most necessary. I don't think anything is gained by having more than one lure on the leader, though I have often used two, or even three, in order to test which would first attract trout.

My favorite testing water is a river with chances of a mixed bag. I frequently capture during one day specimens of brown, native, and rainbow trout. Later, in the same water, I get small-mouth bass, all four species being found in different situations of the river. Rainbows occupy the most turbulent, bass the quietest and deepest parts; the browns generally in fairly deep pools, and the natives in the ripply shallows. I know, more or

less, just what fish will respond by the peculiarities of the water; so I provide the special lure they prefer. Exceptions occasionally occur to that rule, for fishing is an exceptionally surprising game. Trout are erratic, doing stunts and things you least expect. At one rushing torrent I hooked a fine rainbow on a little silver terror, and felt confidently sure that was the bait for him at another similar place. But here the terror failed. I knew fish were there, so I put on the trout cricket. This was in June, long before crickets were abundant, yet the cricket got the rainbow where the terror failed. This and some other experiences go to show that two lures are wise at times; though as a rule I prefer only one on the leader, and change it according to circumstances as they arise. When more than one lure is used on the leader, the snell attachment should be eight inches long. The reason is that at that length the lure will not so easily twist around the leader, there is more room for the fish to grab it, and it stays out better. It is different with a second artificial fly, a three-inch snell is enough not to entangle with the leader. If two or three are put on the leader, the space apart must be two feet, or even more when a long leader is used.

The foregoing applies to surface fishing only. For

bottom fishing I find from experience that light buckshot are best, tied at the very end of the gut leader, and the first lure on the eight-inch snell placed twelve inches above the sinker. This rig allows the lure to lie suspended in the water about the same distance trout and other fish usually



Lure fishing in deep water.

lie from the sandy bottom. Another lure may be fixed above, two feet higher. In that situation it very often attracts the fish more than the lower one. This is because, although the lower one may be preferred, it may have been seen and refused because the food it imitates is absent. Another thing, when you lift the rod tip to make the lure active and alive, it draws their attention more to the higher-placed lure. I only use river-bed creep-

ers for my lowest lures. The question whether creeper lures should not lie right on the bed of the river which some live creepers in their natural state never leave till they make their final change, is easily answered by the fact that if the artificial creeper lies on the bed, it is not so likely to be visible. The action of the rod tip forces the bait down, then up, so that truth to nature is best accomplished that way, by jerking it. This active jerk, to give life movement, is very essential to success; just the same as with live bait, which, if it ceases to kick around in a lively manner, reduces the chances of a strike.

If the reader will refer to Chapter II, on *Characteristic Habits*, it will prove a sort of guide how to imitate this life movement with the artificials —an art requiring some practice to perform well, yet at the same time exceedingly interesting to do. The importance of the peculiarly different action of each one of them makes considerable variety in the method required, giving added interest in the game every time you fish. When you are fishing the artificial in deep though still water, it calls for yet more skilful rod-tip movement, because no rush of water assists that life movement. All that can be done is to lift the tip

up, sideways, in both rapid and slow jerks. Even when trolling the baits in still water, the jerk movement is decidedly good, particularly for crawfish and hellgrammite. This same jerking is good in live-bait fishing, but with a limit; because the bait may be jerked off, a situation not possible with artificials.

Rising again to the surface, special mention should be made of the tiny baits on No. 10 hooks —the terror, grasshopper, cricket, nymph, caddis, darning-needle, and tiny hellgrammite. I fish them all, as I do flies. They are no heavier but they float better. All are deadly baits at certain seasons for average-size natives, browns, and rainbows from ten to fourteen inches long. With the fish at that size, these baits give better sport than it is possible to get in any other way outside of fishing the fly. The way I play them is superior even to dry-fly fishing for several reasons, one being that the fishing is continuous, with no bother of drying or changing your flies. You can fish with success all day with any one of them and continue to capture fish after you have tested the right one to use. I have proved that both cricket and grasshopper will attract trout long before the live insects are abundant. This is an un-

heard-of advantage to have at hand, ready for use at a moment's notice, any artificial you want for use during the entire season. Indeed, did I choose to discard trout flies entirely from my fishing,

New tiny gold and silver body fly minnows for trout and bass.
1. Neversink. 2. Willowemoc. 3. Esopus. 4. Beaverkill. 5. Battenkill. 6. Mongaup.

I should still have along with me artificials that will capture trout quite as well at any time during the entire season.

I am more convinced every season that small-sized lures are more effective for trout, such as the

small darter, one and one-half and two inches long, or the little terror, same size. Both have captured fairly big fish many times. These small minnows when played dexterously round big boulders in rough water are very effective. Experts will recall how very often they find a big brown trout lying directly back of a large rock, with rushing water at each side of his quiet lair. A minnow run down that rapid water is bound to be taken with a savage dash.

Another useful point in these tiny baits, is that they are easier to cast to different spots and to get into difficult places. They are not easily entangled or lost on overhanging branches or under the logs we so often come across in the narrower places.

Before concluding this "how to use" chapter, I wish to emphasize the fact that each individual angler should independently endeavor to originate a method of his own and try to perfect it for himself, simply noting these suggestions as guides and hints—to elevate his recreation from the "catch-fish-anyhow method" to the higher, more perfect accord with nature, and to make his fishing a real art that will prove not only intensely interesting but reasonable and sane. For our own self-

respect, when we fail on flies, don't let us go and "dig worms" like the country kid, who knows nothing better. Reluctant as I am to compare existing methods, I know that even really expert fly-fishermen, upon finding trout unresponsive under certain conditions, are almost certain to have a reserve supply of the dirty garden-worm tucked away for such emergencies. The worm is all right for the plebeian pot-fisherman; but for the experienced expert a rather shameful come-down after which he cannot, without a blush, face his fellows.

I was fishing the lovely Esopus down-stream, having caught several nice fish and left many more that rose to my flies, when I was startled by the voice of a Scotch friend across the stream below me. It was a hot morning with low water, just before Decoration Day. Most of what I caught were taken early in the day. My friend, a real good fellow, rigged up with both clothing and tackle in the most expensive style: his cap covered over completely with artificial flies; he had the best of Leonard rods, and a very fine English reel and dry-fly line, to which at the end of his leader hung a bunch of big night-walker worms. "Had any luck?" he bawled across. "Yes; a few and

several rose just above here!" "Well, I can't get 'em, with anything!" "You would," I replied, "if you fastened that cap of yours on the leader and take off that chunk of beefsteak; then there would be some chance to get trout." "Oh," said he, "I'm sick of casting and changing flies; I want to choke them with this." I have seen numberless examples of this same attitude—aside from the country worm-plugger—of many expert fly-fishermen, who, if unsuccessful with dry and wet flies, turn to what they term, "the inevitable worm," and that usually fails too.

It is this attitude which I wish to counteract with my nature lures by filling that void when trout refuse flies. In bygone days I did as the others do, "turned to worms," and failed; but now, with a selection of surface and bottom lures, when these adverse conditions arise, I can and do capture more and larger fish with the lures than I usually do with flies. As explained in almost every chapter of this book, the reason is obvious: trout are sometimes gorged with flies or feeding below on other food which my lures correctly imitate; not only in appearance, but in action; so that if they are used by this new method, success will be accomplished that would be impossible in other ways.

Before closing this chapter I would say for the benefit of amateurs that my suggested regulation outfit for trout fishing is somewhat ambiguous. Personal preference plays a great part in what is or can be spent on the outfit. I know of a fly-fisherman who pays one hundred dollars every season for a new Leonard rod built to order. Whether he needs a new one or not, he gets one. This, of course, to the prudent man of moderate means is pure wastefulness, and an incentive to breed reprehensible pride and boasting of our fishing-tools. After all, the rod, however splendid, is no attraction to the fish. They don't bite it, and a good all-round workmanlike rod of nine feet (more or less), weighing five or six ounces, if thoroughly well made for general use, at from twenty to fifty dollars, is a tool that will suffice for almost anything. One that while fishing needs no thought or worry as to breaking from being either too light or too heavy. The rigor of the game requires the rod to be a part of you, to do naturally just what you want of it. Indeed, a favorite rod in time becomes a sort of hobby, that to change for another would grieve us. For the small, light lures I use my best English "Hardy," tapered dry-fly line, which enormously facilitates casting—

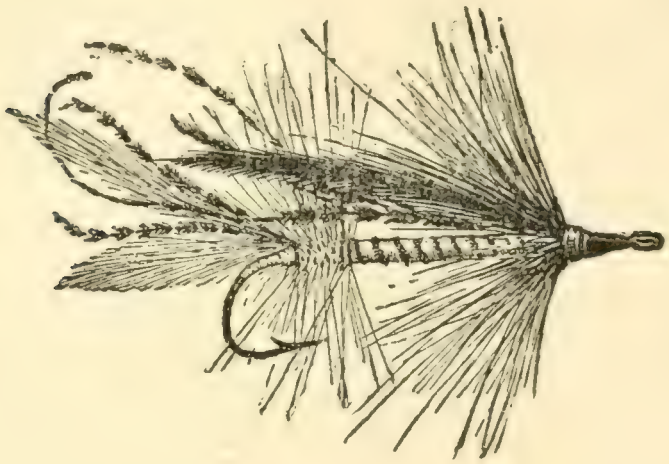
much more so than a flat line of even thickness. For the larger lures and bottom fishing, casting, or trolling, I use a fine linen line, called the "Aviator," made by the Ashaway Co., Rhode Island.

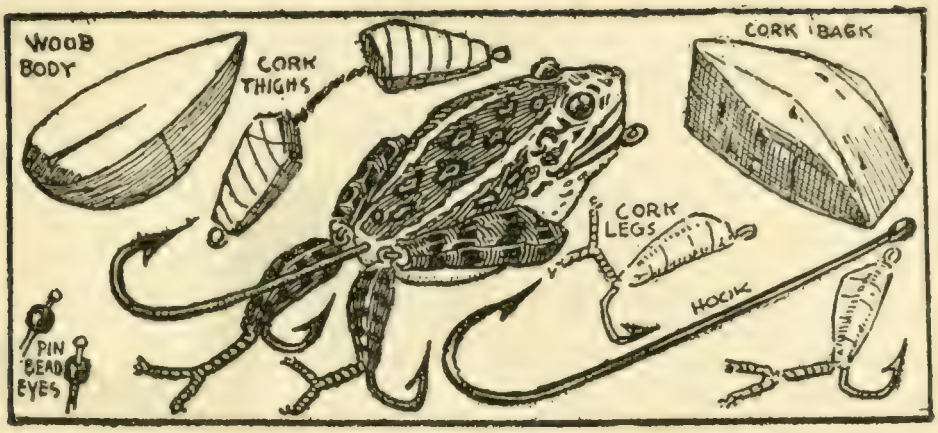
Reels, like rods, are also personal—what you will. They should, however, fit the rod in weight and size, and should be free running, with a good click, and the barrel of ample size to hold the line. I use a take-apart bass reel for aviator line, and a Mills "Neversink" trout reel for the dry-fly line. If more expensive reels are required, the tackle dealer with a smiling face can furnish them.

The only gut leader worthy to fish with is one that is tapered, and snell attachments must be the same thickness of guts as that of the leader where tied, and all ties must be knots instead of loops.

Nevertheless, a true fact remains: the fish you desire to get are attracted, absolutely alone, by the lure you offer. The rest of the rig is incidental, and of less importance. You are absolutely certain to get fish with a good lure and gut leader, even if you use a pole cut from the forest and a ball of twine, though the sport may not be great, but you cannot get fish with a poor lure on the finest rod, reel, and line ever bought. Therefore,

for sure success, first pay attention to the lure; make a good one yourself, or procure a selection that is good, and use a method that is sure, safe, and sane.





XIII

ADVICE TO ANGLERS ON HOW TO MAKE THEIR OWN NATURE LURES

In the course of five years' study of game-fish food and making artificial imitations of it, I entirely laid aside a profession I dearly love—that of an artist. I did so because I found this work even more attractive; indeed, so fascinating as to form in my mind, gradually, it is true, a wish and hope to change existing conditons for a better method in the art of fishing for the benefit of all anglers. At the beginning I thought if my projected improvement were sound and really better, I could then pass it along for others to do likewise—if they wanted. I am sane enough to be very sure I could not alone make a supply sufficient for what

would be required if the baits, after tests, were found good; even supposing I turned the products of my brain into a commercial enterprise or business concern. But for such a project I have no taste or talent whatever. I shall therefore just briefly describe the rudiments and materials required in making several of the most important baits. It would take this entire volume to cover the subject thoroughly. As in all delicate handicraft, to do it well, patience and care are the main things. Those who have time, a deft hand at carving wood and cork, a delicate manipulation in working silk, fine wire, and a little artistic skill with a paint-brush—all these have a decided advantage to begin with—that much less to learn. But continued practice in the end brings skill, at least enough to make a lure which however crude may be good enough to capture trout and other fish, which many guides do. But it will not be wise to attempt to make some of my more complicated lures, unless considerable time is available. It will not be found easy work, even with a pattern taken apart, lying before the amateur bait-maker. One thing it will surely do will be to make him realize what labor has been spent to get so far, even though with great pleasure and

delight. By far the greatest number of anglers who write me for advice are doctors and dentists who want to make their own baits.

For the construction of floating lures, the principal materials are cork, used for backs of frogs and minnows, bodies of crawfish, hellgrammites, crickets, and grasshoppers. Next come hard, heavy wood for bellies of frogs and minnows, so as to balance and make the baits float without turning over and to swim upright; metal-sheets, tinsel, soft wire, varied colored raffia grass, a large variety both in size and color of hackle feathers; thread, silk, mercerized cotton, and worsted of many colors and thicknesses, eyed hooks of every description, oil-paints and artist's brushes, good spar varnish, white shellac, turpentine, alcohol, black wax, white wax, various grades of sandpaper—and an assorted variety of bristles, thick, thin, white and black. For my own requirements, I must keep a full stock of feathers, complete skins of game-birds, from turkey to quail, from wild goose to numerous species of ducks, and many other birds, also some remnants of furs, tails of deer, skunk, fox, squirrel, and hogs' bristles. These must all be kept in glass or tin-covered jars to be free from moths. It is well to know how to use Diamond dyes, and to keep

selected packages of red, blue, yellow, green, and black—to dye white hackle feathers.

The tools required in fly-tying are very few compared to those required for making lures. Each material calls for different, very sharp knives, sharp-pointed, some very thin, others strong, files of every description, pincers, tweezers, sharp-pointed borers, and numerous scissors. A vise is in constant use, which should be stoutly fastened to the work-table; also various saws, mostly fine tooth, and small hammers of various weights. Of course, any angler who merely desires to fabricate a few lures would never dream of stocking up with the above list of things; but I give them in a general way, because each one may desire to make different baits. The great trouble will be found in procuring small quantities, which are far more expensive and difficult to get. The tackle dealer fights shy of an order for half a dozen No. 2/0 small hooks or the like—which, if ordered by the box of one hundred, are very different in price. Tackle dealers do not supply any material or tools required for making baits, except hooks. Wood-turners supply wood of any kind, cut to shape from patterns supplied them. Cork houses do the same; they furnish cork in pieces any shape

or size required. Raffia grass in various colors may be purchased from large seedsmen; for special colors required, I buy the natural cream-colored grass and dye it to suit.

For the shining gold and silver metal-sheets I have had years of difficult work to get just the right thing. For the first of my minnows, the wood was covered with gold and silver leaf, which proved a failure. Then, in succession, I tried rolled sterling silver, tinfoil, sheet aluminum. After infinite trouble at last I succeeded in the present material used, and find it to be the perfect article for the purpose, that will keep its lustre and not rust in fresh or salt water.

This metal being my own invention, I cannot for obvious reasons at present divulge the method of manufacture. I can get a small quantity for those who require it. The different grades of wire I use are soft and pliable—what used to be called German silver, to be procured from hardware stores or wire dealers. The remaining materials can be had at the various drygoods houses. Hackle and other feathers must be hunted for, in all directions, at poultrymen, feather dealers, and millinery shops.

If the amateur bait-maker will look at the page of

baits, he will at once get a general idea of the form and outline of what he wants to make. To best accomplish his object, he should procure a sample as a pattern and take it apart to start right. Take the green leopard-frog as an example to first experiment with. Those who don't know say that the finished objects look very simple and easy to make. The first raw separate parts cut are the back and thighs, of cork, the belly of hard wood. The thighs are tied with twisted wire looped, to connect the legs. The legs are made separate with pieces of cork wound over the small hook with raffia grass, and silk toes are reinforced with a thinner wire, the thighs being held in place by a heavy wire running through inside the body. After that the back and belly are put together after being painted with shellac, with the long shank hook between them; then wound tight with strong wire. The raw material is then ready for painting. First, a coat of common white paint on the belly and green on the back. When dry, the belly has a coat of white enamel; the white eyes and a stroke down the back are made at the same time. Black, yellow, and orange colors are then applied, and after being thoroughly dried, you are ready to varnish with two coats of spar. After the varnish is well dried,

the eyes are pushed in the cork by a common short pin through a black bead. To get proper results, make tests before paint is applied by placing the raw frog in water to find out if it floats true, and the legs hang down to move at the slightest touch. The frog should float with its head just under water.

To make the crawfish, the body is first carved out to shape from cork, and the separate tail likewise. From a turkey's tail feather, you cut an inch piece and wind it on the body, making the winds divide the legs and claws on each side, having the large hook placed over the feather legs. In all cases where hooks are fastened on cork or wood bodies, it is necessary to wind waxed thread along the shank in order to make the hook firm and not twist out of place. In most cases this is fixed with white liquid shellac, to hold it tight. The cork tail is made separate from the body and is tied around with light and dark brown mercerized cotton, covering over the feather tail, which is the top part of turkey's tail feather with a touch of squirrel's hair from the tail. Before winding cotton, a slit is made in the cork for the lesser upright hook, which is wound over very tight. The two parts are now ready for connecting, which

is done by a brad put through the tail hook-eye; then thrust in the body. The bait is now ready for its coat of paint, which is done in various browns on the back and white paint under the body. The horns of thick fibre are tied on with wire, and the eyes are a pair of black beads stuck in with a pin. The whole bait is then varnished with spar, except the wound cotton on the tail.

The cricket, grasshopper, hellgrammite, and others are all cut to shape from cork, and painted. The legs are formed of small feather-quills, the horns and tails being tied on the body with fine silk and then painted and varnished. The hellgrammite is cork body, wound over with raffia grass of black color for head and olive-green for body. The feelers are cut pieces of brown ostrich-feather fibres, which are wound along the body with black silk, and the belly is painted a dull cream color. The body is tied with wire at head and tail to hook, then varnished. The minnows are made in a number of ways, the largest having backs of cork, carefully cut to shape and then wound over with raffia on to the hook. The belly is cut to shape of hardwood, covered over with metal cut to fit; then both are held together with heavy wire. The horizontal side pieces of colored raffia

are tied on close to the hook-eye for the purpose of hiding the open division of the two parts. The tail is tied on to the cork before the raffia is wound over it. The plume is a selection of feathers first bunched together, then tied on, near the eye, at the very last. The raffia on the minnows should be varnished, but leave the metal as it is. The smaller minnows are much more simple and it is advisable to make trials of them first. The smallest tiny minnows are merely wound with mercerized cotton round the hook shank to pad it thicker for the cut metal to be tied over with wire. The small mixed feather plumes are tied in separate bunches, then fastened on at the last. The terror and feather minnows have a thin piece of cork cut to shape tied to the shank, with the covering of metal wound over it, with plumes as before. Many Maine and Canadian guides send me crude, self-made minnows as specimens, asking me to tie a number for them like pattern, with improvements to be made as I see fit; and I have received several excellent kinks from them, which I have found most valuable as suggestions to improve on. I have had two very good ideas furnished me by doctors, who seem to particularly enjoy this interesting work.

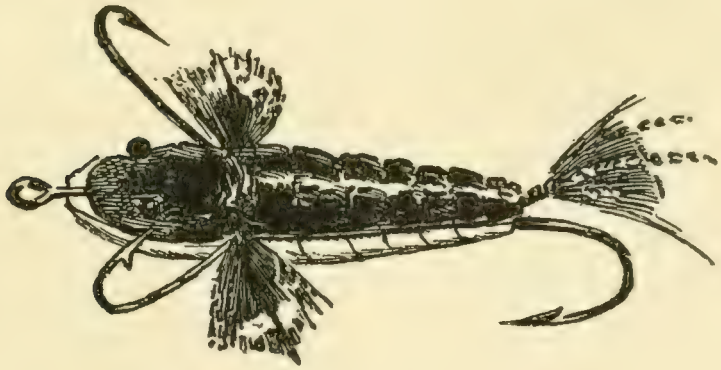
The difficult thing is to get materials for those

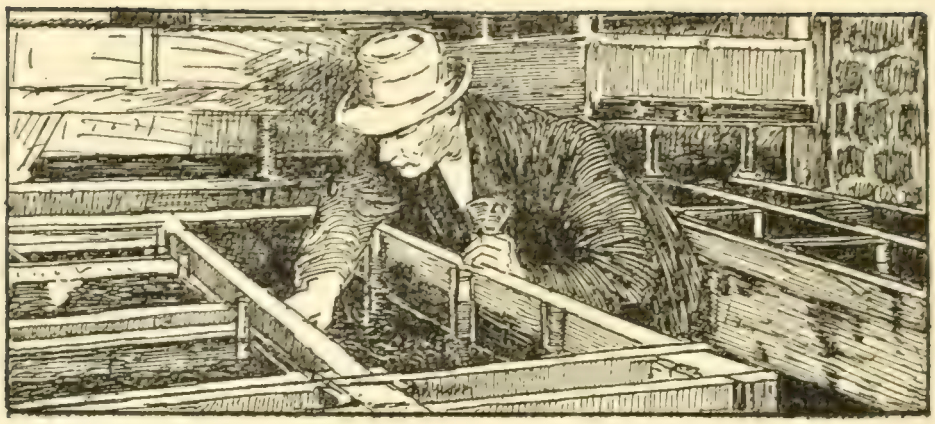
who live away from cities and the stores which carry them, and for me to gather together small quantities. Coupled with considerable information, correspondence takes time and expense. With materials at hand, a number of different-sized minnows can be easily made with a little care and patience, for the principal thing is cutting and shaping, tying cork and wood to the hook, and covering it over neatly with the metal.

Finally, it is wise to abstain from trying complicated baits like nymph and caddis, as they are more in line of tying flies, which would require a repetition on that subject, fully described in my book *Trout Stream Insects.*

The main object of this chapter is to instil in the angler the habit of trusting more to his own intellectual interest in the craft rather than being at the mercy of the tackle or bait dealer for such minor requirements as special baits—important though it be to have them. Of course the majority of anglers think they have no time to bother with this interesting subject; yet the time required is less than they spend in getting and keeping live bait fit for fishing, including the loss of time in vain effort to get sport under present conditions. In any event, if you possess really good artificial

lures, self-made or bought, you are independent—safe to get fish—and you will find much less to vex you in the sport in which you wish to perfect yourself. Your situation will be found very comforting in carrying along little boxes of these lures, ready to use at any time you wish, without any of the tribulations mentioned in Chapter X.





XIV

NOTES ON THE BREEDING AND PLANTING OF GAME-FISH FOOD BY PRIVATE AND STATE HATCHERIES

Up to the present time fish culturists, private fish breeders, anglers, and others interested in the subject of this chapter have not yet even thought of such a thing as to provide game-fishes with proper food. Their whole energies have been to breed all the game-fish possible, to dump them in the waters of brooks, rivers, and lakes, then let nature do the rest; forgetting the undeniable truth that "nature is not always kindly disposed." The little game-fishes they let loose are very young and tender, with no motherly care to protect them from their many enemies, their in-

stinct being the only guide to assist them in the battle of life—often, alas, against their own parents and other species of fish, as well as many birds, beasts, and reptiles, and last but not least, man. Now, I would ask a reasonable question: Does any sane individual, if he thinks at all, imagine such a loose, wasteful, unscientific method is adequate to keep up an abundant supply of game-fish to withstand the assaults of an ever-increasing army of anglers and a growing population of villages and towns near by trout streams and other game-fish waters into which they plant fish?

Abundance of food—the proper kind required for each species of fish—never enters the mind of those individuals who own ponds, lakes, and streams, or who would like to make artificial fish waters by a system of dams or irrigation. Even private club waters persist in feeding young game-fish on putrid food that only induces disease and death to their fish. I receive many requests for information concerning what species of fish is best to plant in their water, and whether certain species will abide amicably with one another. How is it possible for such questions to be answered without any knowledge of what kind of food is avail-

able for the fish when planted to subsist upon? It seems to be generally taken for granted, even by fish culturists, that fish can live on nothing, or something repellent to their appetite; or that fish can perhaps grow their own food. Is such a thing expected of any other creature in the air or on land? The unquestioned, undeniable fact is that food is the one vital thing that means success to keep up ample and reasonable supply to meet the demand of "plenty of big fish" so often asked for.

Of course, fish culturists cannot of their own initiative take up such an important work to any great extent, but they can and ought to be the means of calling the attention of higher State officials to the wisdom of it, and the great benefits to the people at large, aside from anglers.

Fresh-water food-fish, indeed marine fish, are now expensive; a luxury only the rich can command. Fresh-water fish should be made and can be made so plentiful without great cost as to be within the reach of all, at a very low cost. Such a condition existed until within recent years. Twenty-five years ago I could buy at Kingston, N. Y., a four-pound buck shad for fifteen cents. A dollar now would not buy its roe. A century ago servants

and work-people protested—indeed a law was enacted—that employers should not feed their servants on Kennebec salmon more than three times in one week—a privilege those employers living in our day would be pleased to enjoy.

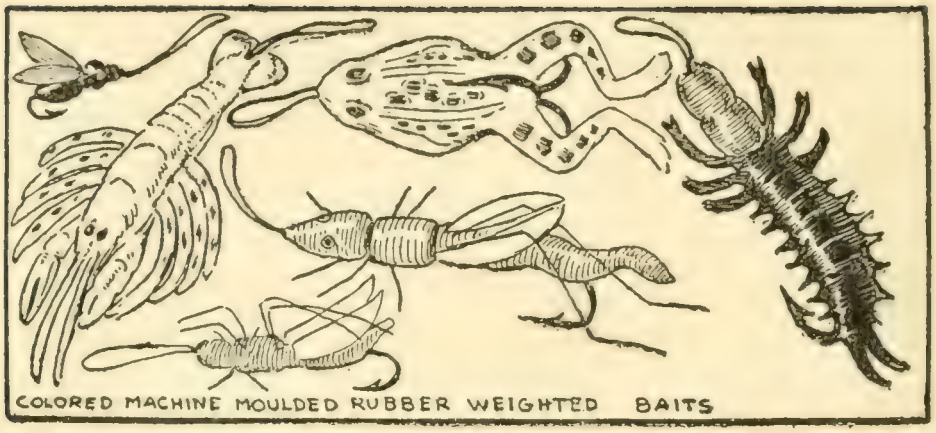
It must not be forgotten that a vast quantity of bottled minnows, pickled in "spirits," are sold as bait in the tackle shops every season. They are really not effective baits, yet I am told by the dealers that anglers want to have them along on their trips as a substitute for live bait they might fail to get when most wanted. I assume these minnows, or young of other fish, are seined in the Great Lakes. How much more valuable they would be to the angler were they transferred when alive to the rivers and ponds where game-fish need them to feed and grow big. A similar unwise and deplorable condition prevails in the sale of vast quantities of live hellgrammites, frogs, crawfish, and crickets, which depletes the available food for game-fishes to a greater degree than is good for the people's welfare in any section of our country.

In Chapter I are given some points on the "Importance of Minnows," and in the "Introductory Note," I plead to encourage the growth of game-

fish. To successfully accomplish these two important benefits for the people at large, the angler should have the most vital interest in it. It is the large and growing army of anglers, collected together from all sections, upon whom the duty lies to improve conditions. They must not stand by and take things good-humoredly, for their own self-interest they should start in by means of a polite yet strongly worded letter to the governor of the State or to the heads of Game and Conservation Commission, suggesting that the indisputable fact of breeding more food will produce better results than their present methods of wasteful overstocking. If State and private hatcheries are not large or suitable enough without additional accommodation for such work, it can be done effectively by utilizing swamp waste waters to be found in almost every township of the land. The canals, for instance, many of them not now in use, are a splendid field for planting and breeding all kinds of fish food, enough indeed to satisfy all needs.

Finally, the most crying need NOW is to put a full and immediate stop to the expensive waste of overstocking game-fishes and replace the surplus with fish food, so that in the near future

sportsmen of larger cities and of humming industrial hives may not be forced to take long journeys to wild lands near the North Pole for their vacation fishing.



XV

WHY PRESENT-DAY ARTIFICIALS ARE INEFFECTIVE AND NOT POPULAR WITH EXPERT ANGLERS

Readers are invited to compare this chapter and the chapter-head drawing with certain details given throughout this volume of the advantages to be gained by using floating nature lures and the method employed in using them, and then consider how needful are the radical changes suggested.

There are thousands of machine-made rubber frights now sold, mostly to those new to the craft, to children, and to anglers who will take anything offered without thinking. Reference is made more especially to those lures stitched on a card

exposed for sale in the tackle shops, comprising rubber "imitations" of frogs, hellgrammites, worms, crickets, grasshoppers, minnows, etc. You never observe them in the expert's kit. He is, however, well stocked with the ever-changing fashion in plugs and other devices. With such I am persuaded to believe he does catch fish; mostly bass and pickerel, when, after considerable practice in casting, he learns just how to use them. I have no interest in debating the subject whether he fully enjoys his sport or why I should try to induce him to change his method. Such a change, if it ever comes, will occur naturally, of his own initiative; more especially from his observations of what others get from their sport as compared with him.

These rubber images, which in place of a better title I call "frights," aside from the inartistic and poor imitation of the creatures intended, have the hooks always placed in the wrong position. Were it by accident swallowed by the fish, the hook would not take hold. Most important of all, their weight takes them plump to the bottom, and if pulled through the water their form makes a motion entirely different from what the creature does in nature. They may deceive ig-

norant men and boys; they seldom deceive the fish, but are more likely to scare them off. The expert knows it and avoids them. On present-day plugs and bugs, of which there are legion that claim to be effective for bass and a few for trout, I think it best to refrain from comment out of politeness to their inventors, who frankly state they are not intended to imitate any kind of fish food. They are offered to the discerning angler with the sole object of attracting and capturing fish. If such be really accomplished, all is well. If the angler chooses to have the same ideas, all that is well too—for him. Manufacturers will continue to make, and dealers will continue to sell, anything, effective or not, so long as there are people ignorant enough to buy them.

It has been my privilege to correspond with a very large number of anglers all over the United States and Canada, and I have been much impressed how many of them want changes for the better; want to study, to learn more, not only of the craft, but of habits and habitats of fish, and the food they take. The present methods and the present lures do not satisfy them, as men who think—discerning anglers. Of course there are some people who are so complacent of their ability that

they have no use for the opinions of experts or of anybody, but they go right to the tackle dealer, ask for anything that will get fish in the easiest way possible, and the dealer gives them the best he has at hand. If the complacent, self-satisfied man fails, he does not blame anybody, but says: "What a darn fool I am to go fishing, anyway."

In the evolution of this important section of the angler's craft I can now speak with far greater confidence than I could five years ago when *Trout Stream Insects* was published. The matter has ceased to be experimental or visionary, to judge not only from hundreds of testimonials received from experts and amateurs who express pleasure at the success of my new theories. We see the plug dying a slow death, which rather dubiously I predicted would soon happen, and we now see the chief manufacturers of them making rods—so far, as a side issue. The cry now is bugs; bugs of all possible shapes and materials that do wonders: Lightning-bugs, thunder-bugs, devil-bugs, nature bugs, illuminated bugs and minnows for night work; even pieces of hogskin make claim to beat the plug and everything else. Suppose they do; it's all the same; they will soon have their day and fall down from anglers' esteem in the evolution for better things.

The right, indeed the only way, will take its proper rank. Anglers will, in time, I hope, fabricate their own lures to suit their own special wants. They will simply be going back to the primitive times of handicraft, when even the savage skilfully worked the most simple materials nature provided him with. Of course, having no tackle shops, he had to do it or starve; but the savage did not starve, neither did he go short of fish. He was wiser and far more humane and skilful than we. The remarkable fact is that he took nature for his guide, this savage. Be he Redskin or Lap, he fully understood the habits and haunts of the game he stalked. That is precisely the attitude I want anglers to take.

It is not so much my baits I desire used as the adoption of my theory, my method, and my object in fishing. Use your own, self-made baits by all means; only think what you lose by the present method. No matter what bait you choose, I verily believe, you can catch fish. But, my dear angling brother, you can catch better than fish along with the fish: Your self-esteem, your self-respect for your higher efforts, and a love of nature. You will find your entire life on the streams to be different. You will cease to boast and to brag

of the number and the size caught, giving vent to all the petty jealousies and devious dodges to beat your companion on the stream. You will no longer be "tickled to death" to see yourself among the everlasting representations now exposed to view in the sporting magazines—with that insipid smile—standing in perspective, far behind a string of fish magnified three times their actual size—the greater the number, the greater the shame. You will forget all the meaner aspects of the vacant-minded, ignorant doings and sayings of the vulgar. In fact, you will become a true disciple of Saint Peter, the patron of all good anglers.

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